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Partnering and Alliancing on Road Projects in Australia and Internationally

Dr Karen. Manley
School of Construction Management and Property
Queensland University of Technology

Abstract

This paper provides an overview of the extent to which road agencies nationally and internationally have adopted partnering and alliancing on road projects. The study was based on a telephone/email survey, with responses being received from the eight state and territory Australian road agencies and 10 international agencies. The results show that partnering is quite extensively employed on road construction and maintenance projects both in Australia and overseas, whereas only one agency has employed project alliances to construct or maintain roads. Discussions with respondents suggest that many road agencies are moving toward more extensive use of more formal partnering, while several are also exploring the potential of alliances. The survey undertaken was a preliminary investigation and further research is required to explore the issue in a more robust manner, with larger sample sizes and econometric/soci-economic analysis of results.

Introduction

This paper outlines the results of a preliminary investigation into the extent to which formal relationship management techniques are employed on road projects in Australia and internationally. The two techniques reviewed in this paper are partnering and alliancing. The research was prompted by the fact that good relations between project clients and contractors have been shown to play a major role in improving project outcomes (Manley and Hampson 2000).

Methods and Scope

The primary aim of the research was to determine the extent to which partnering and alliancing are used on road construction and maintenance projects in Australian and overseas. A telephone/email survey was conducted in order to explore the incidence of partnering and alliancing on road construction and maintenance projects. In the Australian context, all the state and territory-based road agencies were approached and they all provided timely responses. In the international context, 16 road agencies were approached and 10 provided timely responses. Whereas the domestic survey was a census, therefore providing robust results, the international survey provides only indicative results to be used as the basis for further research. The international sample is only small, and was chosen to include those agencies which were widely considered to be leaders in the use of effective relationship management techniques (personal communications, Australian road agency survey participants, 2000).

The Australian Road Agencies involved in the study are shown in *Table 1*.

Table 1: Australian Respondents

Agency	Australian State/Territory	Abbreviation Used in this Paper
Department of Urban Services (ACT Roads and Stormwater)	Australian Capital Territory	ACT
Roads and Traffic Authority (RTA)	New South Wales	NSW
Department of Transportation (Road Development)	Northern Territory	NT
Department of Main Roads	Queensland	QLD
Transport SA (Road Projects)	South Australia	SA
Department of Infrastructure, Energy and Resources (Roads Program)	Tasmania	TAS
VicRoads ¹	Victoria	VIC
Department of Main Roads	Western Australia	WA

This list represents all the state-based road agencies in Australia. *Table 2* shows the international agencies which responded to the survey.

Table 2: International Respondents²

Agency	Country/State
Department of Transportation	Arizona
Ministry of Transportation and Highways	British Columbia
Department of Transportation	California
Ministry of Transportation	Ontario
Highways Agency	United Kingdom
National Roads Agency	South Africa
National Road Administration	Sweden
Federal Roads Office	Switzerland
Department of Transportation	Texas
Department of Transportation	Utah

This list comprises a sample of 10 international agencies.³ These agencies were selected primarily using a ‘snowballing’ method, where leading agencies in the area of relationship management were asked to identify other leading agencies.⁴ Considerable attention was paid to obtaining responses from agencies considered to represent global best practice (in terms of providing value-for-money outcomes), namely the UK, California and Arizona (personal communications, Australian road agency survey participants, 2000). All together, 16 agencies were approached, with six being unable to provide timely responses, three largely because of language barriers.

Data, primarily on ‘number of partnering projects’ and ‘estimated percentage value of partnered work’, were collected from each agency using semi-structured telephone interviews, with the same basic format being applied domestically and internationally. Respondents usually provided answers on-the-spot, without reference to detailed records. Further, respondents were asked for ‘rough estimates’ (in order to encourage timely responses). However, few respondents indicated difficulties with such questions, so it can be assumed that the results presented in this paper represent a fairly accurate picture of recent activity.⁵

The interview questions focused on two key forms of relationship management – project alliancing and project partnering (defined in the next section). Although *on-going* strategic relationships and public-private partnerships are also important for improved project outcomes, an investigation of these issues was beyond the scope of the present study.⁶

Background

The term 'relationship management' is used here as an umbrella concept – implying an approach to projects that emphasises teamwork and cooperation. These key elements of relationship management – teamwork and cooperation – can be applied across the full range of road project delivery systems, from BOOT projects to traditional lump sum contracts.

Project partnering (partnering) and project alliancing (alliancing) are two key forms of relationship management employed on construction projects (see Walker et al. 2000). Both concepts were imported to Australia during the 1990s. Project-based partnering was developed by Charles Cowan in the US context in the early 1990s and has subsequently been adopted on hundreds of Australian road projects. The concept of project alliancing was developed on North Sea oil and gas projects at about the same time by British Petroleum (BP), among others (Thomson 1998). Alliancing has been increasing in popularity over the 1990s, although its use in the construction industry is less widespread than partnering to date. A key difference between these approaches is that partnering runs alongside standard contracts, having no contractual force in itself, whereas alliancing arrangements are formerly expressed in contractual form. While alliancing is both a relationship management system and a road project delivery system, partnering is not a delivery system. Hence, one can have an alliance contract, but there is no partnering contract, only a partnering charter. The charter is essentially an agreement signed by all relevant parties expressing their intention to cooperate on a project.

Relationship-based approaches to project contracting have arisen in response to problems that have intensified as the construction industry has grown over the past two centuries. Such problems have been the focus of major industry and government reports since the 1960s and arise from the highly fragmented nature of the industry and the intense rivalry that results. Rather than leading to efficiency, rivalry often results in litigation. The construction industry is frequently described as being dominated by a 'culture of confrontation' in which a vicious cycle of mistrust, conflict and waste dominates (Seymour and Fellows 1999: 511). This pattern is common to the construction industries of many countries, including Australia. Research conducted for this paper suggests that, on the whole, attempts to improve project outcomes had relatively little impact until the advent of relationship management approaches to project delivery in the early 1990s (personal communications, Australian/International road agency survey participants, 2000).

Partnering is typically defined in the literature as a commitment between the client and the contractor(s) to actively cooperate in order to meet separate but complementary objectives. It is a structured management approach which encourages team-work across contractual boundaries (CIB 1997). Partnering is associated with the use of a range of tools, including:

- charters;
- workshops;
- team-building exercises;
- dispute resolution mechanisms;
- benchmarking;
- total quality management; and
- business process mapping (Bresnen and Marshall 2000: 232).

Charters, workshops and dispute resolution mechanisms tend to be the base-level tools required for effective partnering, with the other tools adding significant value to partnering efforts. Partnering is typically offered as an option to contractors and is a management structure rather than a legal scheme.

The benefits of partnering are well established in the literature (eg. Larson 1997; Uher 1999). Bresnen and Marshall (2000: 231) note the following advantages over traditional approaches:

- increased productivity;
- reduced costs;
- reduced project times;
- improved quality
- improved customer and client satisfaction; and
- long-term partnering helps contractors deploy their resources more effectively.

These benefits will also apply to alliances, perhaps with greater surety given the existence of commercial drivers to ensure cooperative behaviour within alliances.

Project *alliancing* can be considered a highly evolved form of partnering which is enshrined in a contract. Alliancing in this context is not about joint-venture investment-type relationships, but about relationships between clients and contractors on particular types of one-off projects. Drawing on the results of empirical work undertaken for this study and recent literature it appears that very simple projects under \$1m are typically conducted in conjunction with a very modest partnering effort and more complex projects (typically over \$1m) appear to be best managed via a more significant partnering approach. For very large and/or complex projects (say over \$20m) with high risk profiles (including environmental/community sensitivity, traffic management imperatives, tight budgets and inflexible time constraints) alliancing contracts may be optimal.

Alliancing is more resource intensive than partnering, due mainly to complex selection procedures and high on-going information requirements during projects. In its turn, partnering is more resource intensive than conventional approaches due to charter and workshop costs during the initial stages of the project. However, the on-going costs of partnered projects can be lower than under traditional arrangements because of the efficiencies of a well functioning team (see Larson 1997; Uher 1999). The costs of alliancing and partnering are considered to be more than outweighed by the significant benefits that can be expected to result from a less adversarial system (see Manley and Hampson 2000).

The main difference between partnering and alliancing is that the latter employs contractually established commercial drivers to provide financial incentives for good project performance, while partnering has been characterised as being based on 'soft-issues'. The champion of partnering in the construction industry, Charles Cowan, notes that partnering relies on trust and integrity rather than the letter of the law. He suggests that this reliance *solely* on the commitment of individuals can be its best feature (Cowan 1991). However, the empirical work conducted for this study suggests that this may not be the case, as several interviewed clients (eg. from the UK Highways Agency) expressed an interest in developing commercial and contractual drivers to reinforce the partnering spirit.

The Australian Constructors Association (ACA 1999: 10) suggests that project alliancing involves the following:

- a focus on project results founded on successful business outcomes for all parties including rewards for exceptional performance;
- innovative contractual arrangements;
- access to, and contribution by, the best resources of each participant with an emphasis on working together efficiently;
- a clear understanding of individual and collective responsibilities;
- use of key performance indicators to gauge project success;
- an emphasis on openness and cooperation between parties; and
- an equitable risk-reward balance that aligns the commercial interests of the parties.

One of the most innovative elements of alliance contracting is the early selection of contractors based on factors other than price. The client chooses contractors most able to provide *value-for-money* (not lowest cost), often considering:

- technical expertise and experience;
- whether the contractor would be trustworthy, cooperative and flexible;
- current commitments;
- project alliance experience;
- safety record;
- industrial relations record;
- financial and management resources;
- relationships with sub-contractors and suppliers;
- quality and time record;
- claims and disputation record;
- environmental management;
- risk management; and
- insurance claims (KPMG 1998: 9).

Reference to these factors helps ensure the selection of contractors most capable of undertaking a particular project (KPMG 1998: 9). This differs from pre-qualification processes in the sense that a contractor's suitability at a particular point in time, for a particular type of project, is assessed on a case-by-case basis under a project alliancing system.

A key feature of alliances is the commercial incentives they involve. These typically take the form of arrangements to share project losses, and the benefits of extraordinary project results, between clients and contractors/consultants. The arrangements encourage cooperative behaviour, which is more likely to persevere during difficulties on projects than if relationship management was relying purely on the good-will linked to partnering approaches.

It is beyond the scope of this paper to more comprehensively detail partnering and alliancing approaches to project procurement and management. This has been effectively undertaken by a number of national and international studies and interested readers are referred to the literature listed in *Table 3*.

Table 3: The Literature on Relationship Management

Australian Studies – Project Alliancing	Australian Studies – Project Partnering	International Studies – Project Alliancing ⁷	International Studies – Project Partnering
<ul style="list-style-type: none"> • Walker et. al. (2000) • McLennan 2000) • Ross (1999) • ACA (1999) • Pratley (1999) • Shepherd (1999) • Thomson (1998) • KPMG (1998) • Skinner (1998) • Hampson & Kwok (1997) • Peters et al. (2001) 	<ul style="list-style-type: none"> • Uher (1999) • Lenard et. al. (1996) • Thompson (1994) 	<ul style="list-style-type: none"> • Kemp & Stephen (1999) • Green (1995) 	<ul style="list-style-type: none"> • Bresnen & Marshall (2000) • Bennett and Jayes (1998) • Larson (1997) • Barlow et. al. (1997) • Loraine & Williams (1997) • CII (1996) • Latham (1994) • Weston & Gibson (1993)

Several of these studies have attempted to examine the outcomes of relationship management compared to conventional approaches to project procurement and management. The results of these endeavours are summarised in Manley and Hampson (2000) where it is argued on the basis of the evidence uncovered that *extensive* benefits are associated with partnering and alliancing. A recent and high-profile example of these benefits is provided in Peters et al. (2001) which documents construction of the National Museum in Canberra, under a project alliance.⁸ This project was considered an outstanding success by all participants, despite being constructed in a very short time period under considerable uncertainty. The Australian National Audit Office in its examination of this project alliance has concluded that despite the challenges involved in appropriately managing probity issues, ‘project alliancing offers potential benefits over traditional construction contracting methodology... [and is] worth consideration by agencies involved in major construction projects’ (ANAO 2000, 13).

Relationship Management on Road Projects in Australia

The intention of this study was to examine both partnering and alliancing as key forms of relationship management. However, it soon emerged that very few road projects internationally have been undertaken using alliances. Indeed, in Australia there have been very few project alliances *of any type*. Table 4 lists major examples.⁹

Table 4: Australian Project Alliances Commenced to Date

Year Commenced	Client	Project
2001	Queensland Department of Main Roads	Port of Brisbane Motorway
2000	Queensland Department of Main Roads	Peninsular Development Road, Cape York
2000	Queensland Department of Main Roads	Lillyvale to Lucknow Road, Emerald
2000	Queensland Department of Main Roads	Nerang District Maintenance Projects
2000	Queensland Department of Main Roads	Pacific Motorway Maintenance, Brisbane/Gold Coast
2000	Queensland Department of Main Roads	Barcaldine District Maintenance
2000	Queensland Department of Main Roads	Bracker Road, Warwick
2000	Queensland Department of Main Roads	Devoncourt Deviation, Cloncurry
2000	Queensland Department of Main Roads	Carrington Road, Toowoomba
2000	Gladstone Area Water Board	Awoonga Dam
1999	Western Australia Water Corporation	Woodman Point Wastewater Treatment Plant Upgrade
1999	ElectraNet SA	HV Transmission Works, Pelican Point Project, SA
1999	Queensland Rail (QR)	Cairns Tilt Train
1999	Queensland Department of Main Roads	Norman River Bridge, Normanton, NW Queensland
1999	Queensland Department of Main Roads	One Contract Package on the Pacific Motorway Project (converted from traditional contracts) – at the time of writing, possibly others to follow
1998	ElectraNet SA	HV Transmission Works, Penola West Project, SA
1998	Commonwealth Government of Australia	National Museum of Australia, Acton Peninsula, Canberra
1998	BP/BOC/Lend Lease	QLD Clean Fuels, Bulwer Island, Brisbane
1997	NSW Rail Access Corporation	Maintenance Contracts
1997	Sydney Water	Northside Storage Tunnel
1996	BHP	Direct Reduce Iron, Port Headland
1994	Ampolex (Mobil)	Wandoo B Oil Platform, WA
1994	Western Mining Corporation	East Spar Oil and Gas Project, WA
1990s	Worsley Alumina	Expansion Project
1990s	Hazelwood Power	Precipitator Upgrade
1990s	Comalco/Bechtel/Minenco	Boyne Island Smelter Expansion, Gladstone
1990s	Western Mining Corporation	Olympic Dam Project

1990s	Pasmenco	Century Zinc, NW Queensland
1990s	CRA	Weipa Upgrade, North Queensland

Source: Based on Ross (1999: 24); Thomson (1998); Skinner (1998); KPMG (1998); personal communications with various agencies.

Of these 28 examples, 10 involve the road sector, with QLD as client. Two of these have been undertaken with the private-sector, while eight are trials with the road department's in-house construction arm. It is a conclusion of this research that QLD is the first road agency world-wide to have adopted an alliancing approach to projects, although other agencies, such as the Highways Agency in the UK, are considering moving in this direction. It is not only that none of the international agencies surveyed had undertaken project alliances, but that of the 16 respondents contacted none were aware of road project alliances by another other agency world-wide.

QLD only uses alliances for large, complex/high-risk projects, which are deemed to require incentives for good performance beyond those cultivated under their 'extended-partnering' arrangements.¹⁰ QLD has been able to satisfy probity requirements on project alliances because of:

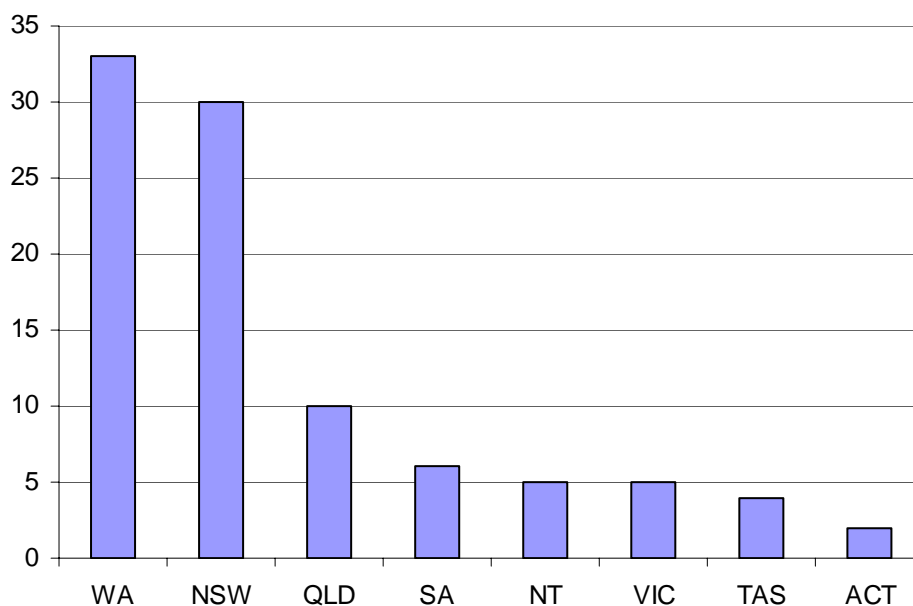
- a state government purchasing policy which promotes contracting on the basis of 'value-for-money';
- a heavy emphasis on probity auditing throughout alliance projects;
- contractor-selection based on very clearly defined competition based on non-price criteria; and
- independent checks on the target price (which is negotiated with the selected contractor) (Mike Swainston, personal communication, 16 April 2002).

The use of alliances only for large, high-risk and/or complex projects means that the proportion of work undertaken under alliances by QLD is low, when measured by number of projects, but much higher when measured by value of projects.

For now, partnering activity on road projects is far more extensive than alliancing, both in Australia and internationally. This probably reflects the fact that the partnering approach was developed in the context of the road industry, whereas alliancing was developed in the oil and gas industry and is taking time to be adapted and adopted by road agencies. Due to the absence of project alliancing by all surveyed agencies, except QLD, the remainder of this paper concentrates on partnering activity.

The number of partnered projects undertaken by each Australian agency over the past year is shown in *Figure 1*.

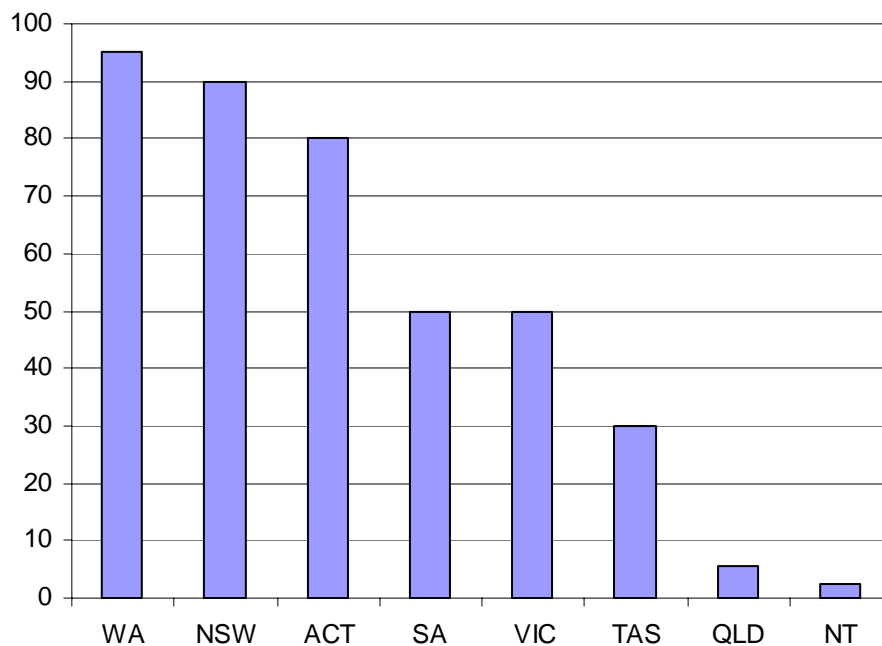
Figure 1: Number of Partnered Projects, Australian Road Agencies, 1999-00*



Note 1: Number based on respondent estimates. Note 2: Several respondents answered for the 1998-99 financial year. Note 3: Includes projects commenced, ongoing or completed. Note 4: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held. Note 5: The VIC figure is the number commenced.

This chart shows the number of partnered road projects each agency was involved in during 1999-00, whether in new construction work or maintenance contracts. WA and NSW clearly dominate this chart, each undertaking at least three times as many partnered projects as the other agencies shown. This dominance would appear to be related to the forging of early relationships with appropriate people in overseas road agencies with experience in project partnering. *Figures 2 and 3* review each agency's partnering effort as a proportion of the total value of work.

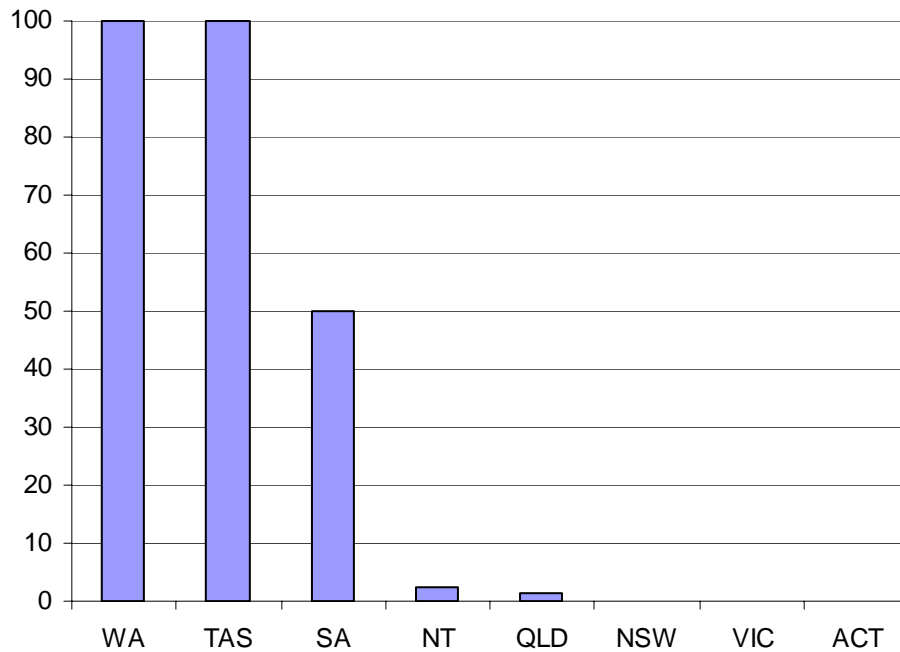
Figure 2: % Value of Road *Construction* Work Involving Partnering, Australian Road Agencies, 2000*



Note 1: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held.
Note 2: Percentage is based on respondent estimate of the value of work being undertaken at the time of interview (June/July 2000), or the previous financial year.

WA and NSW again dominate, both partnering on nearly the total value of their new construction work. The ACT also partners on the vast majority of new work. Comparison of Figures 1 and 2 reveals that some states, such as the ACT, partner on a very small number of projects that constitute a very large proportion of the total value of their construction work. On the other hand, agencies such as QLD partner on a larger number of projects, that constitute a relatively small proportion of the total value of their construction work.

Figure 3: % Value of Road *Maintenance* Work Involving Partnering, Australian Road Agencies, 2000



Note 1: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held.
Note 2: Percentage is based on respondent estimate of the value of work being undertaken at the time of interview (June/July 2000), or the previous financial year.

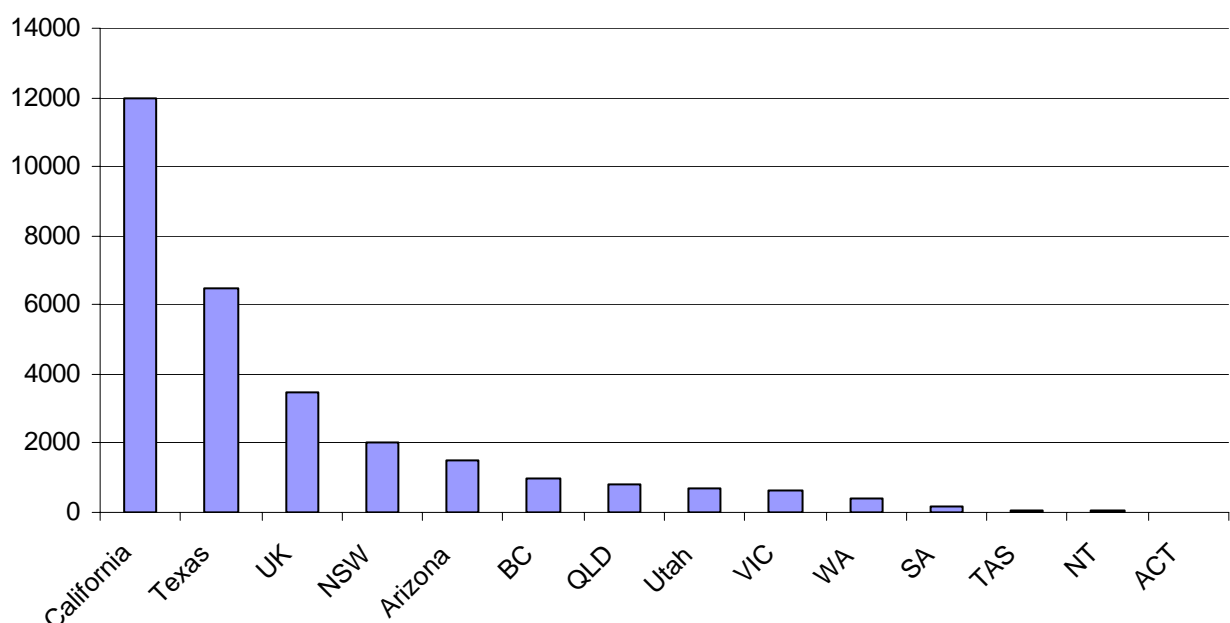
WA is again in the leading position, this time along with TAS. Three of the agencies – NSW, VIC and the ACT, do not partner at all on maintenance work.

The leading states, WA and TAS both rely on long-term area maintenance contracts. The survey results suggest that road agencies that have adopted long-term maintenance contracts are very likely to partner on those contracts.

Partnering on Road Projects Internationally

This section will present data for the six international agencies surveyed which were actively partnering projects, that is: Arizona, British Columbia, California, Texas, United Kingdom and Utah. In addition, data for all the Australian states/territories is shown, as an indication of Australia's relative activity. Of the international agencies approached, Ontario, South Africa, Sweden and Switzerland were not actively involved in partnering at the time of the survey. *Figure 4* shows the annual budgets of relevant agencies, as background to their partnering activity.

Figure 4: Total Annual Road Construction and Maintenance Budget, International and Australian Road Agencies, A\$M



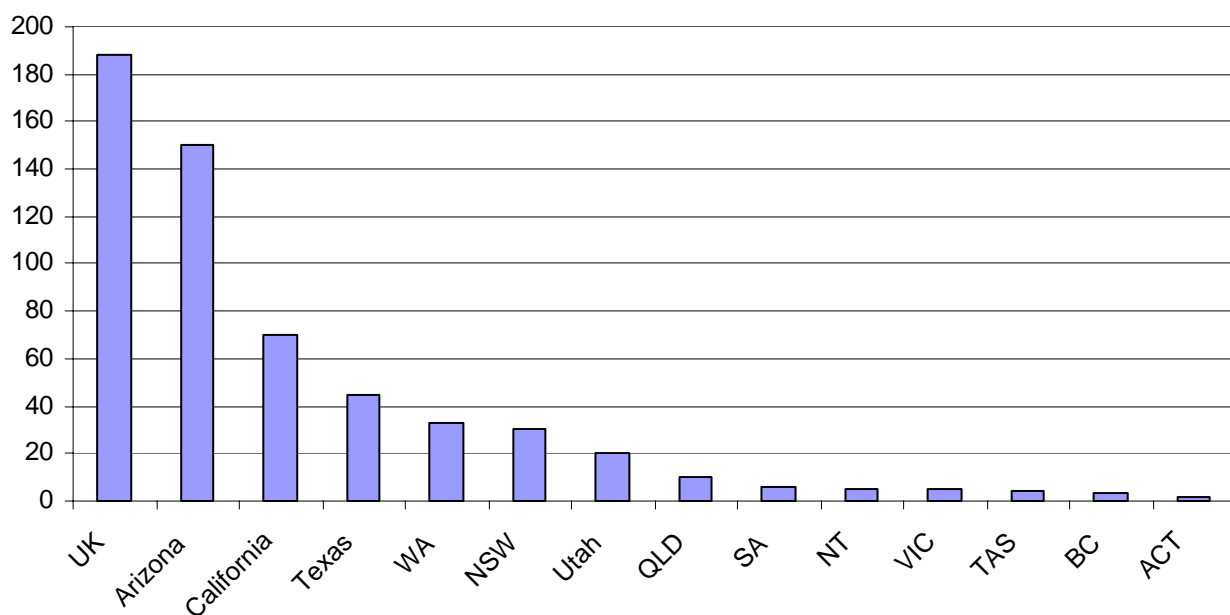
Note 1: Data based on respondent estimates. Most agencies gave their budget for the 1999-00 financial year, while several gave an average over the past few years. Note 2: Some estimates represent the midpoint of a range given.

By this measure, California is the largest agency, having a budget nearly double the size of that of any of the other agencies shown. The ACT's budget was smallest overall, at \$11.5m.

The Californian road agency is responsible for 24 000 km of road, more than that managed by most of the other agencies shown. California's population is 34 million, five times greater than that of any of the Australian states. These figures give an indication of the differing scale of operations of the agencies. We might expect scale to influence the extent of partnering activity undertaken by an agency, however survey results indicate that Arizona is an extensive user of partnering, while having a relatively small budget, managing less than 10 000 km of road and having a population of only 5 million.¹¹

Figure 5 provides an indication of the extent of current partnering activity in relevant road agencies globally and nationally.

Figure 5: Number of Partnered Projects, International and Australian Road Agencies, 2000

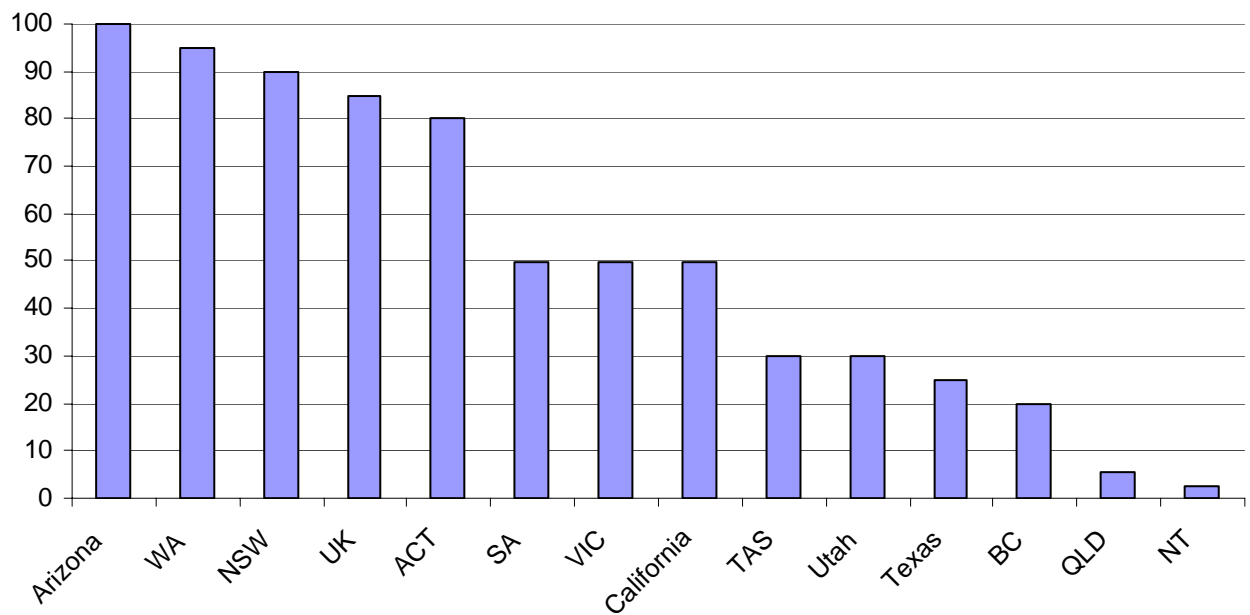


Note 1: Number based on respondent estimates. Note 2: Several respondents answered for the 1998-99 financial year. Note 3: Includes projects commenced, ongoing or completed. Note 4: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held. Note 5: The VIC figure is the number commenced.

The UK and Arizona stand out as the biggest users of partnering approaches to road construction and maintenance, compared to the other countries/states shown. Both these agencies partnered at least twice as many projects as any of the other agencies. This appears to be related to the presence of dedicated 'innovation champions' pushing the move to increased partnering of projects.

Figure 6 shows the value of road construction work involving partnering as a proportion of the total value of road construction work.

Figure 6: % Value of Road *Construction* Work Involving Partnering, International and Australian Road Agencies, 2000

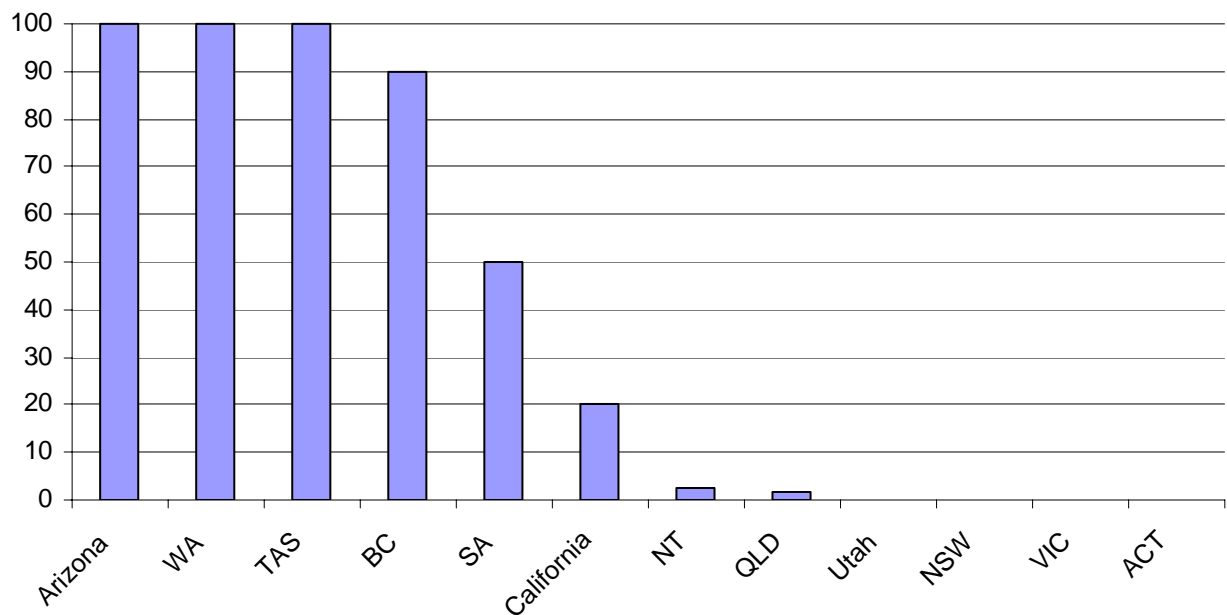


Note 1: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held.
 Note 2: Percentage is based on respondent estimate of the value of work being undertaken at the time of interview (June/July 2000), though some respondents gave an average figure over the past three years. Note 3: UK and Texas figures are for combined construction and maintenance.

Arizona, and the UK again dominate, this time along with WA and NSW. Most of the agencies shown partnered on at least 50 per cent of the value of their new construction work. Only QLD and NT partnered on a negligible proportion of their work.

Figure 7 shows the value of road *maintenance* work involving partnering as a proportion of the total value of road maintenance work.

Figure 7: % Value of Road *Maintenance* Work Involving Partnering, International and Australian Road Agencies, 2000



Note 1: 'Partnered projects' were defined as involving a charter being signed, and/or workshops being held.

Note 2: Percentage is based on respondent estimate of the value of work being undertaken at the time of the interview (June/July 2000), or the previous financial year.

Three agencies partner on all their maintenance work, Arizona, WA and TAS. For WA and Tasmania, this is associated with the use of long-term maintenance contracts. Arizona only contracts-out about 10 per cent of its maintenance work (all of which is partnered), so its partnering effort on maintenance is less extensive than on new work. Four agencies never partner on maintenance work, Utah, NSW, Vic and ACT. The research undertaken for this project indicated that a particular agency's level of involvement in partnering for maintenance work was greatly influenced by the way in which maintenance work was managed. Long-term contracts were more likely to involve a partnering element, whereas in-house work precludes partnering with an external contractor.

Conclusions

Research conducted for this study shows that partnering is used extensively on road projects in Australia, and in key regions globally. Although several overseas and domestic road agencies are considering moving towards alliancing, as yet no road project alliances have been initiated, except by QLD. It seems that the road industry will follow the oil and gas industry, where the benefits of alliancing have been firmly proven and where alliancing has a significant presence (see Thomson 1998). Several survey respondents indicated that alliancing approaches were likely to be adopted by their road agency in the near future. It seems that as more alliancing projects are completed, and as the benefits of alliancing become more widely recognised, we can expect to see the rate of adoption accelerate.

Though formal partnering has been employed on road construction projects for a decade now, and despite some commentators suggesting it has outlived its usefulness¹², the research results suggest partnering remains an essential component of relationship management processes. Indeed, the partnering genre is constantly evolving as agencies seek best-practice project outcomes. This has occurred through the use of partnering approaches in conjunction with other methods of value-adding, such as value-engineering and risk management. Further, some agencies are looking at combining partnering with innovative delivery strategies, such as ‘construction management’ or ‘cost-reimbursable performance-incentive’ contracts. Consideration is also being given to legally formalising partnering arrangements – a move towards the alliancing approach.

Indeed, the recorded successes of project alliancing (see Manley and Hampson 2000; Peters et al. 2001), and current contracting trends, suggest that for particular types of projects, use of alliancing is likely to increase rapidly over this decade. It seems clear that *both* partnering and alliancing will continue to evolve as best-practice approaches to relationship management on construction projects. Indeed, over time it is likely that the distinctions between partnering and alliancing, as practiced on construction projects, will become blurred.

Partnering, combined with standard, but perhaps more innovative, contracts, remains a best-practice approach for projects of low and moderate levels of complexity – which constitute the bulk of road construction/maintenance work. For larger and/or more complex road projects, alliancing appears to provide the necessarily robust drivers required to maintain incentives for outstanding project performance.

The study revealed a number of innovative methods used by the road agencies surveyed to maximise the benefits of relationship management; these include the following:

Innovative Partnering/Relationship Management

- adoption of ‘construction management’ and ‘performance-based cost-reimbursable’ project delivery systems to be used in conjunction with partnering;
- extending the partnering approach beyond construction and maintenance work to other areas, such as electrical procurement;
- the flying of partnering ‘team flags’ on projects to foster a sense of pride in the project team;
- emphasis on partnering in contractor pre-qualification criteria;
- partnering on *all* construction and maintenance work;

- the combination of innovative value-adding strategies, such as value-engineering, with partnering approaches to yield maximum outcomes;
- non-optional partnering training for contractors on very large/complex projects;
- consideration of making partnering a contractual clause with legal force;
- the use of consultation documents to encourage input from contractors and subsequently a sense of 'ownership' of relationship management improvements instigated by agencies;
- consideration of alliance approaches to project delivery;

Innovative Partnering Administration

- establishment of a partnering office within the agency;
- the employment of several full-time partnering staff;
- the funding of a partnering program, in part, through the collection of fees for training programs set-up for contractors;
- the collection of aggregated partnering outcome statistics over many years;
- an integrated systems approach to all the components of partnering;
- the development of sophisticated software packages to facilitate the input of partnering data from remote sites on a regular basis (on-line measurement capability);
- the development of partnering workshop timing and duration guidelines;
- partnering award schemes to assist in the collection of data on partnering outcomes and promote excellence;
- development of a standard partnering field-guide and video package for use by site personnel;

Other Relationship-Related Innovations

- adoption of a quality/capability based tender selection process (not appointing contractors on the basis of lowest initial price alone);
- involving contractors very early in the project process (eg. in the feasibility stage);
- adoption of a 'whole of supply chain' perspective;
- whole-of-life costing; and
- adoption of value-engineering processes and risk management processes.

These strategies represent best-practice approaches to maximising the benefits of relationship management. Road agency performance has been shown to be significantly improved by incorporation of the above strategies (personal communications, Australian/International road agency survey participants, 2000).

The issue of relationship management is an important one and further research is required to build on the preliminary research findings presented in this paper. This is particularly true in relation to the international work, where sampling on a larger scale is required. Socio-economic and econometric analysis also needs to be undertaken, especially with regard to the links between relationship management techniques and project outcomes. More broadly speaking, it remains to explore in detail the level of satisfaction with partnering processes and outcomes experienced by participants.

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Author Note:

Dr Karen Manley is Research Fellow at the School of Construction Management and Property, Queensland University of Technology. She is an author of high profile industry policy publications such as 'The High Road or the Low Road? – Alternatives for Australia's Future' and a Project Leader in the recently announced Cooperative Research Centre in Construction Innovation.

Submitting author contact details:

Dr Karen Manley
Research Fellow
Construction Research Alliance
School of Construction Management and Property
Queensland University of Technology
GPO Box 2434
Brisbane, Qld. 4001
Australia

Ph. 61 7 3864 1762

Fax 61 7 3864 1170

Email k.manley@qut.edu.au

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Notes:

1. The Melbourne City Link project is not included in the results as VicRoads was not the client.
2. Several Asian agencies were approached, however they failed to respond in the time required (partly due to time losses arising from language differences).
3. For the sake of brevity, this paper refers to road agencies in particular countries/states simply by naming the country/state. For the same reason, the Canadian provinces are implied by the term 'state'.
4. It later emerged that South Africa and Ontario were active in 'public-private partnerships'; these are essentially a finance option for public clients, rather than a form of relationship management on projects owned by the public-sector. Similarly, Sweden and Switzerland were innovative in areas other than relationship management on projects.
5. Where a respondent's estimate was given as a range, eg. 'between 25 and 50%', the midpoint of the range was used as the estimate for the purposes of this study.
6. For examples of the benefits of long-term agreements between supply-chain participants, readers are referred to the Whitbread and Sainsbury case studies published in Bennett and Jayes (1998); and to CIC (2000). Readers interested in public-private partnerships are

referred to the government websites for Ireland (<http://www.irlgov.ie/gov.htm>), Canada (<http://canada.gc.ca/>) and the UK (<http://www.hm-treasury.gov.uk/>).

7. This list does not cover the extensive literature on *strategic* (on-going) alliances.
8. The Acton Peninsular Project (which includes the National Museum Project) is the first project alliance for a *building*, worldwide.
9. Though this list may omit some examples, it includes the bulk of major project alliances undertaken in Australia.
10. For 'extended partnering', QLD uses a modified version of the AS 2124 contract; while for alliances, it uses a purpose-built contract.
11. Arizona also maintains the most extensive database on the benefits of its partnering, compared to other agencies globally. Results are presented in Manley and Hampson (2000).
12. Personal communications, Australian/International road agency survey participants, 2000.