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A collaborative approach to address the cumulative impacts of mine-water discharge: Negotiating a cross-sectoral waterway partnership in the Bowen Basin, Australia

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ABSTRACT

The social and environmental impacts of rapidly expanding coal and gas industries have generated high levels of public concern and there is increasing evidence of cumulative impacts. In the Bowen Basin of Queensland (Australia) water quality issues have triggered a collaborative response to coordinate monitoring efforts, integrate data and information and undertake regional analysis to inform landscape-scale management. Collaborative governance is promoted as a response to complex environmental problems, such as cumulative impacts. However, application of this approach to the resources and energy sectors remains a significant research gap. This paper reports the results of action research in the 2 years taken to negotiate the establishment of collaborative governance arrangements to address mine-water discharge impacts in the Bowen Basin. The long establishment phase has been required to refine objectives, build trust, develop governance mechanisms and secure resourcing commitments. The partnership established involves more than 20 organisations including regulators, resources and energy companies, agricultural industries and research organisations. The breadth of participating sectors is a significant innovation, but also represents a major challenge in establishing this model of regional environmental governance. Promising strategies adopted to manage these tensions have included neutral brokerage, facilitative leadership, establishing legitimacy of the collaboration and credibility of its reports. The case study provides a cautionary tale of the pursuit of the promise of 'everyone working together' to address cumulative impacts. Policy implications include the need for extended commitment and integration of collaborative and other responses.

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Introduction

Coal and gas industries are undergoing substantial expansion in Australia and internationally (Measham et al., 2013). Cumulative environmental impacts are likely to arise with multiple developments and competing land uses. Cumulative impacts are more complex and uncertain than single issue or single site environmental management problems (Franks et al., 2010a, 2010b). In recent decades, collaborative approaches to waterway management have provided a mechanism for multiple stakeholders to plan and coordinate responses. A rich literature on collaboration provides some guidance on the challenges and benefits of such an approach (Forester, 2012; Huxham and Vangen, 2005). Experience of collaborative governance models within the resources sector is, however, limited.

This research aims to explore the application of regional collaborative governance models to manage the cumulative impacts of resource industries. Are collaborative responses appropriate in this context? How can collaborative approaches be brokered, and what limits their effectiveness? These questions are explored through a single case study of an innovative regional model that has emerged in the Bowen Basin of Queensland, Australia. The Fitzroy Partnership for River Health was established to "develop and implement an integrated waterway monitoring programme that will report publicly on waterway health at the catchment scale, and support improved water resource management by all sectors" (Fitzroy Partnership for River Health, 2012). The partnership is unique in that it includes substantial engagement with the resources sector and other key catchment stakeholders (the 26 inaugural partners include private corporations, government agencies and non-government organisations).

This paper reports on the outcomes of a 2-year action research process that followed the progressive negotiation of partnership

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objectives, membership, funding arrangements and governance structures. In the following section we review literature on cumulative impacts and collaborative governance. “Research questions” details the research questions that guided our enquiry and “Methods” outlines the methodology and data collection methods. In “Background to the Fitzroy partnership for river health”, we provide background on the establishment of the partnership and in “Results”, detail the results. The paper concludes with implications for policy and practice.

Cumulative impacts and collaboration in the resources sector

Mining and cumulative impacts

In resource-rich nations, growing pressure to access mineral and energy resources is increasing the scale of associated social and environmental issues. The impacts of coal mines, for example, include environmental issues such as dust and water quality (Breerton et al., 2008) as well as social and infrastructure impacts on housing, workforce and social services (Rolfe et al., 2007; Franks et al., 2010a). These impacts are cumulative since they result from the successive, incremental and combined impacts of activities (Breerton et al., 2008). Impacts can accrue in time and space, and can interact in synergistic ways.

High levels of public concern have been generated by these impacts, undermining operators' social licence to operate (Franks et al., 2009; Prior et al., 2011). Social licence to operate refers to a community's perceptions of the acceptability of a company and its local operations (Prno and Scott Slocombe, 2012; Thomson and Boutillier, 2011). Social licence to operate is a major driver of community engagement in the resources sector (Burke, 1999; Hamann, 2003) partly because of the potential for community activism to impose substantial costs and/or delays on mining operations (Humphreys, 2000; Davis and Franks, 2011). In response to changing community expectations, large mining companies are adopting professional community engagement strategies (Heller and Zavaleta, 2009) and reporting social and environmental performance (Carpenter et al., 2001).

However, while companies seek to manage impacts of their own operations, they are individually unable to address cumulative impacts. In addition, poor performance of any *one* mine in a region is likely to influence community perceptions of *all* mines in a region since reputational impacts are felt at the industry as well as the corporate level (Humphreys, 2000). In mixed land-use regions, the impacts of mines will combine and interact with impacts of other land uses, such as agricultural activities. Effective management of cumulative impacts requires the total effect of all stressors (including combined and secondary impacts) to be kept within an acceptable or desired level (Duinker and Greig, 2007). Addressing cumulative environmental impacts requires access to information about threats, ecological responses, and management options. The relevant information is typically distributed across a range of public, private and civic institutions. Thus, cumulative impacts in mixed land-use regions are a key driver for resource companies to engage in collaborative, cross-sectoral approaches to monitor and manage impacts (Selsky and Parker, 2005).

Collaborative governance

Governance is defined as the set of processes by which decisions are made, including formal and informal mechanisms. Single modes of governance include state (governments), market (corporations) and civil society (community organisations) (Franks et al., 2010b). State governance is traditionally enforced through compliance with regulation (Prno and Scott Slocombe,

2012) at global, national, state and local levels. Market-oriented governance largely relies on price mechanisms to drive behaviour. Civil society encompasses non-state and non-market actors and mechanisms, but is principally comprised of non-profit organisations (Margerum, 2011). Hybrid governance models have emerged in recent decades (Franks et al., 2010b; Prno and Scott Slocombe, 2012). Collaborative governance is one such hybrid model, that brings together multiple stakeholders with public agencies to engage in consensus-based decision-making (Ansell and Gash, 2008).

Cross-sector collaboration is seen to provide valuable opportunities to address problems that are characterised by complexity, uncertainty, interdependency, and knowledge gaps (Bryson et al., 2006; Williams and Sullivan, 2007). Other conditions may also drive cross-sector collaboration (Bryson et al., 2006; Pfeffer and Salancik, 2003), including environments where:

- competition for, and regulation of, limited resources force a collaborative strategy to meet performance criteria,
- the separate efforts of organisations to address an issue have failed (and hence they need to harness the knowledge or competencies of others), and
- there is a history of relationships among relevant institutions to provide a foundation for working together.

Collective action can add value or deliver what has been called “collaborative advantage” (Huxham, 2003). The aspirational benefits of such collaborations have been outlined by numerous authors (Ansell and Gash, 2008; Craig and Taylor, 2002; Goldsmith and Eggers, 2004; Keast et al., 2004; McGuire, 2006; Perkins et al., 2010), and include:

- avoiding high costs that may arise in adversarial policy making,
- expanding the base for democratic and meaningful public participation (especially where there are multiple, potentially conflicting, interests and there is a desire to be inclusive and responsive to this diversity),
- enabling collective learning and being open to political, emotional and technical input as equally relevant,
- offering flexible ways of operating rather than rigid, bureaucratic processes, and
- mobilising diverse resources and sharing risks and responsibilities across sectors.

Collaborative governance has potential to deliver more effective and sustainable solutions where conventional approaches of government control or market competition have failed. Collaborative approaches to waterway health monitoring and management are well established in Australia (Abal et al., 2006; Eberhard et al., 2009; Robinson et al., 2011) and overseas (Booher and Innes, 2010; Koontz, 2006; Margerum, 2008; Pahl-Wostl et al., 2007). Waterways appear to attract collaborative responses because they are (literally) downstream of land use impacts. Franks et al. (2012) recently identified more than 30 collaborative initiatives in which the Australian mining industry is engaged in, managing impacts on economic and social infrastructure, air and water quality, landscape rehabilitation, workforce and skills, Indigenous employment and training (also see Porter et al. (this issue)). No others, however, engage multiple sectors in collaboration around cumulative impacts across a catchment. Other studies of collaborations involving the resources sector have been undertaken in South Africa (Hamann, 2003; Hamann and Acutt, 2003)

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