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The expected impacts of mining: Stakeholder perceptions of a proposed mineral sands mine in rural Australia

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ABSTRACT

The form and evolution of stakeholder perceptions toward renewable energy (RE) developments continue to be investigated, but there has been little similar research regarding mines. Responses of community members and other stakeholders cannot be expected to evolve the same way between different resource and infrastructure projects. We ask what the various expectations of planned mines are among community members, and what factors impact these expectations. We perform a case study of a planned, large-scale, mineral sands mine in rural Victoria, Australia (2013–2015). Using a closed-question questionnaire ($n=32$) and semi-structured interviews ($n=25$), individual and community experiences of the planning process were examined. We explore stakeholder perceptions of the mining company and development process to date, as well as future expectations. Despite the recognition of mining as a normalised part of modern Australian economy and culture, the results revealed a community with low-trust in the mining company, and accompanying negative perceptions of their own involvement thus far. These perceptions translated into negative future expectations. Many factors influential in the formation of RE opinions were also significant here, these include: background factors; visual and environmental impacts; and, the actions of the company to date. Other factors are not so prevalent in RE literature and may be specific to mines, these include issues surrounding the rehabilitation of the land and the history of the mining company.

1. Introduction

Individual and community perceptions can fundamentally impact infrastructural developments (Jobert et al., 2007). It is therefore critical for communities, policy makers, and developers to understand factors that provoke or reinforce opposition and acceptance. In the renewable energy (RE) field, the formation of perceptions towards renewable infrastructure is well studied (Devine-Wright, 2007; Jobert et al., 2007). The role of place attachment (Cass and Walker, 2009; Devine-Wright, 2009), background conditions (Devine-Wright, 2007; Jobert et al., 2007), trust (Siegrist and Cvetkovich, 2000; Tokushige, et al., 2007; Bronfman et al., 2012), communication (Jobert et al., 2007; Dütschke, 2011), and participation have all been investigated with respect to their influence on community perceptions (Corscadden et al., 2012). Applying these findings to mining developments may occasionally prove effective, but mines are distinct in character to other infrastructural developments, with a vastly different range of impacts and life cycles. Efforts have been made to understand the economic, social and environmental impacts of mines (Petkova et al., 2009), along with the concept of social license to operate (Paragreen and Woodley, 2013; Dare et al., 2014). Previous research on community-mine relations has largely focused on community experiences of functioning mines, rather than exploring the factors which shape perceptions towards proposed mines. Since the demand for mineral resources will persist for the foreseeable future, and interactions with local communities are likely to continue, it is crucial that community-mine relations continue to be explored. This research provides new insights by focusing on community and individual *expectations* of the impacts of a proposed mine. This research is relevant to stakeholders such as developers and government agencies who can use these findings to develop sustainable planning and development approaches, as well as mitigation strategies that are informed by both community knowledge and needs.

1.1. Perceptions of mining developments

Not In My Back Yard (NIMBY) was once a popular explanation for local resistance to infrastructure projects such as mines and wind farms; however, it is now considered a problematic

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oversimplification of local concerns (Michaud et al., 2008; Wolsink, 2012). More recently, disruptions to place attachments, defined as an emotional bond that individuals hold to places, are increasingly cited to explain public opposition, rather than protectionist self-serving NIMBY explanations (Cass and Walker, 2009; Devine-Wright and Howes, 2010). Moreover, the perceived negative local impacts associated with large infrastructure projects such as wind farms, are often seen as a form of threat to individual and collective community identities, an effect quite distinct from NIMBY sentiments (Devine-Wright, 2009).

Community-mine relations and local attitudes are shaped by complex interactions of positive and negative factors, influenced by both mining company and government attempts at sustainable development and relations-building. As Petkova et al. (2009) reports, mining development can affect almost all branches of the community; not just those stakeholders directly impacted by the mine. Potential environmental impacts, such as effects on terrestrial and aquatic systems, play a key role in shaping negative community perceptions towards mining projects, with community benefits and impacts on lifestyle exerting less influence (Charlier, 2002; Mason et al., 2014; Zhang and Moffatt, 2015). Recent research reveals that communities almost always view landscape and environmental impacts as negative (Miller and Sinclair, 2012). This is especially true with respect to open-cut mining (Cheney et al., 2001). Further negative consequences include undesired demographic and social changes (Esteves, 2008; Petkova et al., 2009). Perceived positive impacts are also reported in the literature and encompass demographic change through diversification, the provision of additional services, job creation, community development, and increased income (Mason et al., 2014; Petkova et al., 2009; Zhang and Moffatt, 2015).

It is generally accepted that mines in higher income countries, such as Australia, need a “social licence to operate” i.e. companies must illustrate that they are accounting for the environmental and social impacts, and implementing mitigation strategies (Dare et al., 2014; Paragreen and Woodley, 2013). In this vein, Prno (2013) identified five key actions that mining companies can take to establish a social license, namely: local benefits provision; the building of relationships; an awareness of context; increased focus on the sustainability of operations; and, the ability to adapt. There is also an understanding that meaningful community participation in the planning and development process is likely to enhance transparency and trust, and thereby acceptance (Brereton and Forbes, 2004; Walker et al., 2010).

Recent mining research has continued to investigate both the wide range of impacts associated with mines and the social license concept, with researchers advocating different, and often diverging, approaches to sustainable mining (Dare et al., 2014; Owen and Kemp, 2013). For example, Owen and Kemp (2013) recommend setting a collaborative developmental agenda for industry with a focus on stakeholder engagement, while Dare et al. (2014) conclude that community engagement has a limited influence on achieving a social license. This research adds to the existing mining literature by focusing on community and individual *expectations* of the impacts of a planned mine, as opposed to solely their *experiences* of it.

1.2. Mining: a global and Australian perspective

Despite recent reductions in global mineral prices, mining remains a pivotal industry in many nations worldwide, including; the United States, China, and Australia. This paper focuses on Australia as mining is both a critical sector of the economy and a divisive political and social issue. In the early 2000s, the minerals industry has played a key role in the economic boom experienced by Australia and represents a key indicator of the health of the economy (Hajkowicz et al., 2011; McKenzie et al., 2014; Measham et al., 2013). Mineral resources continue to contribute to economic growth and represent the largest export sector in 2014 (ABS, 2014, 2015). Historically, mining has also played an important role, as mine developments and closures have decided the fate of townships, for better and worse.

Research on expectations and perceptions of *future* mining impacts, both locally and nationally, have been largely overlooked in the literature in favour of studies exploring community attitudes towards *functioning* mines. This paper offers insights on the key stakeholder concerns and the factors that shape community perceptions of proposed projects in Australia. Such data is critical in the development of best-practice approaches for community engagement in mining, which in the case of Australia, is notably lacking. Our research is guided by two questions:

1. What is the range of expected community impacts of a mining project, and how do these perceptions differ between groups of stakeholders?
2. Which factors influence perceptions between, and within, groups of anticipated impacts, and which are most significant?

2. Study area and methodology

2.1. Study area

The research site was a proposed, large-scale, long-term (55–160 years), mineral sands mine located in a rural area of Western Victoria, Australia (see Fig. 1). The planned mine was chosen for investigation because of the area's combination of mineral, agricultural and aesthetic values. The area is well-accustomed to mining developments, with prior proposals for a similar mineral sands mine in the 1980–1990s, a long gold mining history around Stawell (an account of this local history is available in Murray and White (1983)), and the more recent development of the Iluka mineral sands mine near Douglas. However, the proposed mine, targeting a 12,850 ha deposit of mineral sands, would be much larger than any previous mines in the area. The region encompasses many parks and areas of natural beauty, including: The Grampians National Park; Little Desert National Park; and, the Black Ranges State Park. Agriculture is the largest economic sector, providing 9.6% of the direct regional jobs, with further indirect employment though support services (ABS, 2011).

During the research period (2013–2015), the mine was in the proposal phase and developers were engaging with the community as a part of the Environmental Effects Statement procedure (EES) as per the ministerial guidelines of the state of Victoria. The mining company released a Stakeholder Consultation Plan to the public, developed a website, and placed various advertisements in local news sources. Engagement with the community included information sessions, meetings with local government and other authorities, and private meetings with directly affected landholders. This stage of the planning and development process offers a crucial opportunity for community participation to have a tangible effect on the parameters of the project and is therefore key to understanding the construction of individual and community perceptions.

2.2. Methodology

This study took a mixed methods approach, combining the distribution of 97 questionnaires with 25 semi-structured interviews. Mixed methods approaches move beyond the qualitative–quantitative division to take advantage of the strengths of both (Johnson and Onwuegbuzie, 2004). The questionnaires and

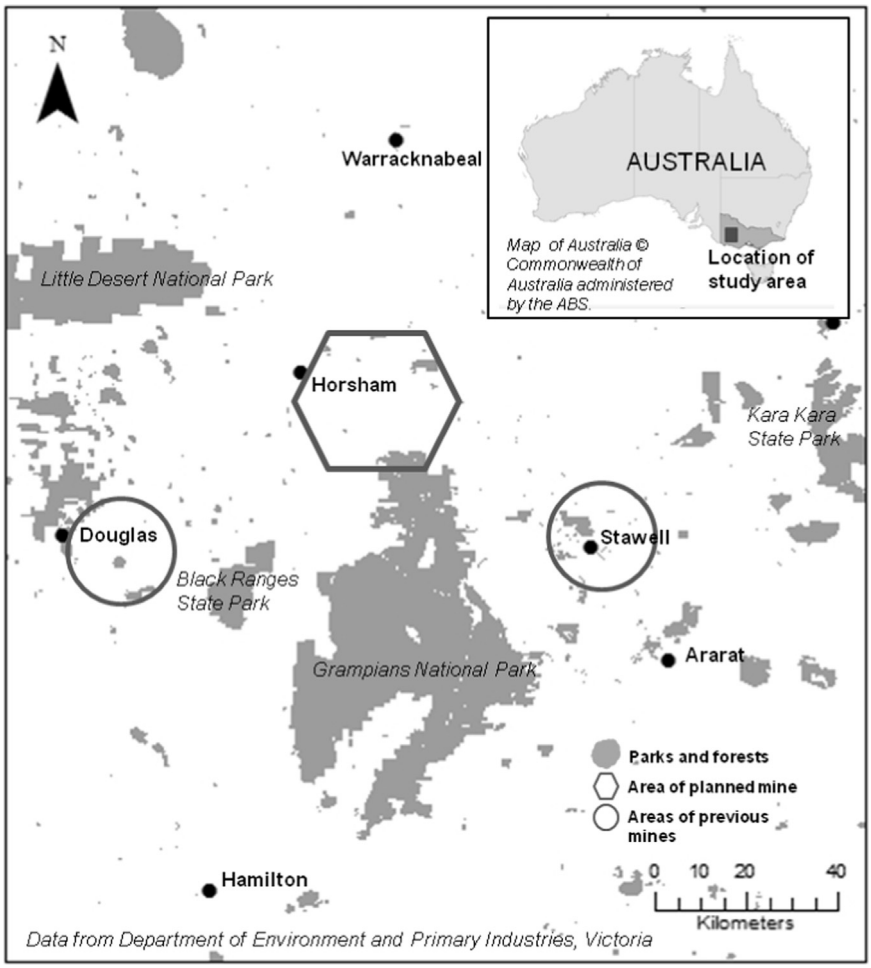

Fig. 1. Map of Horsham and surrounding area (150 km by 210 km). The location of existing mines is shown in circles and both state and national parks are marked in dark grey. The discussed mine is planned within the hexagon area. The dark shaded area in the inset map of Australia is the region of the State of Victoria.

interviews explored factors which previous studies have highlighted as influential in the formation of perceptions towards infrastructural developments.

2.2.1. Questionnaires

The questionnaires were delivered through letterbox distribution to stakeholders living in the 3500 ha area directly affected by the proposed mine up to a 20 km radius around this area, and by request through post or email (in the environs of the hexagon shown in Fig. 1). Participants were asked a series of 30 open and closed questions addressing aspects regarding community involvement, trust, information provision, and future expectations. A 10-point Likert scale was used for all closed questions, while open questions asked for explanations of responses and definitions of words such as “community engagement”. There were 32 respondents resulting in a response rate of 33% (32/97). While this reduces the sample size, considering the low population density of the region this will likely still be representative of general expectations. Background questions included the occupation and age of the respondent, and whether they had knowledge of the mining proposal. Those who knew of the planned mine were asked how they had heard of it and what communication had followed since. Finally, there was some overlap between questions in the questionnaire and the interview, with both containing specific sections targeting experiences and expectations of community engagement.

2.2.2. Interviews

To acquire the views of all stakeholder groups, representatives were sought from multiple groups in the community and at different government levels. Stakeholders from each of the following groups were interviewed, with the stakeholder code to maintain anonymity and number of interviewees from each group in brackets: mining company (MC; 1), community members (CM; 11), Victorian Government departments (VG; 4), local government (LG; 4), local authorities (LA; 1), emergency services (ES; 1), business groups and utilities (BGU; 2), and the media (M; 1). Other stakeholder groups were approached in a manner similar to the above, including two local indigenous groups and government departments, but no responses were received. Community members were asked questions regarding their personal background, knowledge of the planned mine, the role of community in planning, and their experience of the planning process. All other stakeholders answered slightly different questions, including: their employment background; their knowledge of zoning and mine permitting; the mining company's efforts to engage the public; their views on the importance of community participation in general; the expected effects of the mine on the community; and, the community's involvement. Questions were drawn largely from issues identified as important to the formation of perceptions and engagement experiences from previous literature, alongside basic background queries and the participant's knowledge on this specific proposed mine. The interview data was coded and analysed using grounded theory and common themes, such as shared concerns and satisfactions, were identified and analysed.

3. Results

The questionnaire findings are given in a 1–10 framework where low/high responses represent negative/positive opinions, respectively. The dominant reaction to the planned mine was negative, with low-responses to questions regarding the mining company's activities to date and expected future developments, and with a far wider variety of drawbacks than benefits. Views on mining in general were neutral: the most common opinion was 5 out of 10 on a scale from very negative (anti-mining) to very positive (supportive) (Fig. 2). However, average opinions on this specific planned mine were consistently lower, with a median of 4 for information provision and community involvement. Likewise, there was dissatisfaction among participants regarding the extent to which they had been involved to date. Respondents, on average, wanted more involvement than they currently had. Furthermore, while trust in the government to prevent environmental degradation was low, 3.7; trust in the company do so was even lower at 3.0. There were no pronounced differences in the anticipation of impacts between community and non-community members.

3.1. Economic expectations

Economic benefits for the community were anticipated by nearly all respondents; however, while the majority of community members expected their community to receive economic gains, very few envisaged receiving personal benefits. Only 18% of all questionnaire respondents expected to receive individual economic benefits. Yet with 85% viewing themselves as a member of the community and 75% expecting the community to experience positive economic impacts, the majority of respondents anticipated *other* community members benefiting, not themselves. Nonetheless, there were factors which distinctly affected expectations of personal benefits. Certain groups held a presumption of individual economic gains: three out of seven government or local council employees, five out of sixteen of those who had lived more than 10 years in the area without being born there, and four of the twelve people who had not been approached to discuss the proposed mine. The explanation for this is unclear, but it is possible that respondents working for government were more aware of the implications for the region and thereby the potential *indirect* economic benefits. Likewise, three out of the twelve of the group who had spoken to no one about the planned mine also expected no drawbacks, a significant proportion compared to those who had spoken to others. Thus, information and communication appear to have a double-edged effect. More knowledge leads to a more insightful analysis of the indirect effects of the proposed mine, while less knowledge appeared to conflate their expectations of benefits and decrease their expectations of drawbacks.

Expectations of the possible mine discussed during the interviews expanded upon the questionnaire findings reported above. Many interviewees spoke positively of direct job opportunities that may come with the mine development, with several pointing out the likelihood of increased indirect work for service providers, and the flow-on economic effects such as the stimulation of further employment in the locality. Some even suggested that the planned mine would bring an economic boom to the region:

> "…it is going to be a massive boom for the region. Jobs-wise, service-industry wise." (CM1)

However, while the questionnaire results indicated a strong expectation of economic community benefits, the interviews revealed that there were numerous, important caveats regarding these economic expectations. While government employees (local and regional) and business group representatives spoke positively about economic benefits, a group of community members discussed the greed of the company and government and argued that they are more concerned with short-term profits over long-term concerns:

> "[the local government's] always been greedy for money, that's all they can see, the dollar sign coming in." (CM8)

Community members concerned with company and government economic interests perceived the expected economic benefits of mining as overriding other important considerations of value, or functions of the area, such as landscape and sustainable farming operations, respectively. That the proposed mine brought more short-term benefits (i.e. increases in employment and services associated with an economic boom) and fewer long-term benefits as compared with agriculture was highlighted as a positive aspect by several interviewees. One common refrain was that mining would disrupt farming and soil/land rehabilitation in the long-term. Community stakeholders expect this disruption to negatively affect tourism, especially small, local tourist operators. Government employees also showed awareness of the potential negative impact on the viewshed from the nearby mountains and the associated impact on tourism (see Fig. 1); however, one

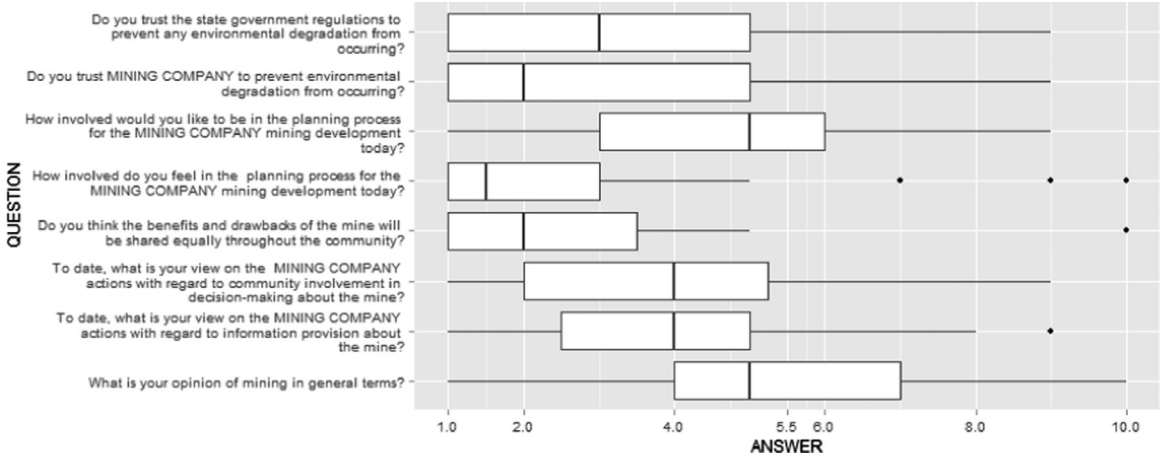

Fig. 2. Opinions on mining and the planned mine. Likert Scale: 1 represents a 'negative' opinion, 5 represents a 'neutral' opinion, and 10 represents a 'very positive' opinion. The box edges represent the 25th and 75th percentile (the distance between them is the interquartile range). The median is represented by the central line. The horizontal extending lines show the total range, excluding data points more than 1.5 times the interquartile range away from the 25th and 75th percentile; these outliers are indicated as points.

business group representative argued the opposite case, pointing out that the planned mine would draw attention to the area, which it has historically failed to capture:

> "this part of Victoria is notoriously neglected. Even by the tourism body, who has a wonderful tourism campaign for the state but there is no mention of [Local Town 1] and surrounds at all … it will just raise the profile of the region." (BG2)

The number of concerns about the economic trade-offs in RE developments are often lower because tourism and farming can continue in and around the development (for example, around the base of wind turbines). With regards to mining, a broader view including more economic activities is important.

3.2. Environmental expectations

Impacts on the environment, traffic and pollution were most frequently mentioned across all responses. When asked which factors influenced their opinion of the planned mine, issues such as; dust, noise, pollution, birdlife, and the landscape were frequently mentioned. These areas of impact are direct and physical effects of mining – trucks on the nearby highway and the land used for the open-pit of the potential mine – and are therefore highly visible consequences which may come to mind quickly. However, answers also encompassed context-specific concerns: rehabilitation of soils and farmland, physical impacts on tourism, and the displacement of community members. Finally, and in line with the RE literature, those who had higher trust in the government and company to prevent environmental degradation also expected no drawbacks.

Similar to the questionnaire data, environmental changes and pollution were also mentioned frequently in the interview data. There were polarised views among stakeholders, with some interviewees expressing concern that it would be impossible for the proposed mine to avoid environmental damage, while others were of the opinion that "very few to no ecological assets that will be impacted by the mining process." (CM11). Many interviewees expressed concern over the proximity of the planned mine to multiple lakes and waterways citing tourism and safety issues, as well as the loss of natural aesthetics and ecosystem function, particularly related to "the water catchment coming out of the mountains" (CM1). In addition, those expressing concern about the lake were also highly likely to hold other landscape concerns, such as destruction of the scenic value of the area, especially the view from the highway and mountains.

Land rehabilitation (i.e. restoring land to its pre-mining state) was a commonly cited and serious concern, some were convinced the potential mine would do a satisfactory job (mostly government employees or business group representatives), whilst others (mostly community members, with one local statutory management authority) were sceptical, even scathing, of the mining company's ability to rehabilitate the soils and farmland. Even the two community members who were most positive about the success of rehabilitation had doubts, either because of the uncertainty of the process, or because of a conviction that the productivity of the soil would decrease. Others spoke of "lies" propagated by mining companies (including the planned mine in question) regarding the rehabilitation of soils to their pre-mining state, as well as the previous failure by our case study company to return the land at a different mine site to a satisfactory quality for local farmers. Indeed, multiple farmers and other stakeholders referred to the special nature of the soils of this area, and that it would be "virtually impossible to [rehabilitate] our soil" (CM4). This deep-seated knowledge of their land combined with their awareness of other community's experiences were influential in the formation of community perceptions regarding land rehabilitation:

> "as they finish mining they will turn it back into farmland, but the productivity of that farmland will probably be decreased… the miners keep saying that it [will] not, but all the agricultural people I have spoken to about what actually happens, is that it does decrease." (CM6)

3.3. Perceptions of engagement

Across all stakeholder groups there was agreement that the community was complacent in getting involved in the planning and development process, with suggestions that many community members would only participate if the realised mine was directly affecting them. That said, there was disagreement on the extent to which the mining company had extended opportunities to participate to date in the first place. While government employees and local business groups held largely positive perceptions of stakeholder engagement in the planning and development process, community members and other government employees were more sceptical of the meaningfulness of community participation to date, as well as the level of power they had been granted:

> "[we] do not feel any involvement … just get letters saying what they are doing … we are nothing, we are imbeciles." (CM8)

Community stakeholders who felt involved in the planning process, at levels of 9 and 10, mentioned no individual drawbacks. In contrast, those reporting an involvement level of 1 out of 10 were the only respondents who foresaw no community benefits from the proposed mine. Negativity about the mine company's efforts to provide information on the proposal also meant expecting no community benefits and a vast array of drawbacks. This negativity was reflected in open comments on factors shaping opinions, including complaints about confusing material on regulations, and not receiving enough information about the mining proposal. The influence of community involvement and information provision have been well-established with regard to RE developments (Buchy and Race, 2001; Jobert et al., 2007; Vaidya and Mayer, 2014; Connor et al., 2009). Community members who had communicated with neighbours, the company, or the local council indicated a greater variation of drawbacks than those who received limited information and communication regarding the project. The mining company approached landowners of interest, i.e. those with land necessary to the development, on a one-to-one basis. The interview data underlines that such a targeted approach, in the absence of more embracing forms of community engagement, may serve to alienate other community members. Knowledge of how *other* community members (i.e. not landowners of interest) are experiencing the process is also reported as influential in the formation of perceptions towards the proposed project.

3.4. Social expectations

Respondents that expected an unequal distribution of impacts (1–2.5, out of 10) were typically those who also held low-opinions of mining, trust in institutions (such as government or company), or those who felt uninvolved or uninformed. Again, the influence of communication was evident and those who were first informed about the mine plans through the media expected low-equality in distribution of impacts (below 2 out of 10), while those who had communicated with neighbours about the proposed mine held an even lower expectation of 1.3. The opposite was also evident, i.e. those with extremely high-opinions on mining, high-levels of trust in institutions, or those who felt involved and informed had the

highest expectations regarding the equal distribution of impacts (5–10 out of 10). The open-ended answers revealed that community members saw their land as being 'stolen' and farms being 'taken', as well as the destruction of lives, suggesting these factors, whether experienced personally or expected to be the experience of others, shaped their opinion on the mine project as a whole. Often, concerns did not revolve solely around perceived changes to stakeholder's personal circumstance as a result of the planned mine, but what would happen to the community as a whole, or to other specific groups – such as farmers – if the project were to go ahead. The history of the company and the details of the current operation to date were also mentioned. Community stakeholders expressed disappointment regarding the company's community engagement efforts which did not extend beyond government regulation baselines, and expressed irritation regarding the nature of interactions with company representatives at public meetings. The unexplained delays encountered during mine's planning process were also a point of contention.

The expected economic outcomes of the proposed mine were often closely related to anticipated social changes, including benefits such as potential income, the effect of an influx of workers migrating to the area on existing local services, and concerns about increased council rates. The planning and development time-scale of mines is context specific and differs per mine in question. Some developments are short-term, undergoing planning, operation, then closure within 10 years; others, can stretch over many decades. Thus, the social expectations may often be linked to the planned duration of the mine. The business group and local government representatives notably recognised the potential benefits of increased economic capacity in the area, listing a potential to both improve the profile of the region and effect a positive change in demography for the town and surrounding area e.g. an increase in customers for local businesses and the number of children enrolling in kindergartens. They highlighted that due to the duration of the planned mine (55–160 years), local people could build long-term business-models. That said, both business group and local government interviewees were careful to point out that additional pressures would be placed on services, specifically mentioning an existing drug problem that could be exacerbated in one of the local towns (LG2). Opinions on infrastructure were divided between those with expectations of damaged infrastructure such as local roads, and those who hoped for new infrastructures as a result of mining activities. Increased traffic and access issues were also mentioned, including concerns over road closures, inaccessibility of destinations, and reduced access to the lake for recreation.

While business group and local government representatives were focused on service-provisioning issues, community members had other social concerns including (a) annoyance at the disruption of livelihoods and future plans, (b) fears of raised council rates, (c) cost of living, and (d) housing and product prices. Beyond annoyance, some community members reported a genuine fear of negative change to community values, and individual futures. These fears were personal, about one's own lifestyle, livelihood and family, but also about how community spaces would be impacted:

> "the lake is the most important aspect of it all … the bottom line is, that lake belongs to, [and] services, a lot of people." (CM3)

A further concern was related to place attachment, in particular the loss of valued vistas and landscapes. For some, place attachment was linked to the land, with community interviewees expressing a fear of losing the land that has been in their family for generations. One community member outlined the 'huge impact' (CM5) of the potential mine, stretching beyond just one generation or one set of individuals and impacting the whole community and future generations. For other interviewees, place identity was closely linked to the lake and the way it provided a recreational space for the community. When community interviewees were asked to describe their community, many defined the lake as one of the primary geographical spaces at the heart of their community. For example, they highlighted their use of the lake for 'water skiing, fishing, fishing in boats, and fishing [from] the [shore]' (CM5). This expectation of losing a valued landscape is reinforced by a business group representative who acknowledged that:

> "initially there will be some drawback[s]…matched by a sense of excitement, but perhaps a sense of loss…. not really a tangible loss, but the landscape, that's loss of the horizon, the nothing, except a crop of wheat or something. I think there will be an initial sense of loss around that." (BGU2)

4. Discussion

Here we evaluate the interview and questionnaire responses to the proposed mine as either personal, place attachment, or project-related factors. These categorisations draw on the work of Devine-Wright (2012) which analysed the influence of these factors on public opposition to power lines. Reflecting the standard of knowledge in the social acceptance of infrastructure literature, this categorisation offers an effective lens through which to classify and analyse our data.

4.1. Personal factors

Personal factors include social class, gender, education, length of residence in the area, and proximity to the development site. While social class was not directly measured, occupation did influence responses. Those employed by local council or state government were more likely to identify personal economic gains and a variety of community benefits. Residence time in the area also influenced responses: only those who had lived in the region for more than ten years, but had not been born there, expected personal economic benefits. However, while respondents who had lived in the area 6–10 years did not expect personal benefits, all expected the community to benefit economically. Similar to findings in the RE literature we find that personal factors influence perception formation. However, as with that literature, it may be context-specific and may not hold generally for all development scales and community structures (Devine-Wright, 2012).

4.2. Place attachment

Similar to RE developments, here we find that defence of place, aesthetic impacts, and history of the region all play a key role in the development of community perceptions. Supporting previous findings in RE studies, negative perceptions were not grounded in protectionist NIMBY sentiments, but emerged due to expected negative changes to place and community (Devine-Wright and Howes, 2010). This defence of place was motivated by the community's appreciation of the aesthetic and historical uniqueness of the region. There are two major points of distinction between our findings and those of the RE literature, namely: access to amenities, and the impact on soil quality. Due to the much larger footprint and land use requirements of mining developments, access to amenities (such as the lake in our study) were highly influential in the formation of community perceptions. A likewise distinction was found with soil quality whereby the community expected negative impacts having the potential to threaten the

type and scale of agriculture practised. Again, this distinction is based on the required activities of mining when compared to RE developments, and may even be specific to the mining sector more generally. As many mines are planned in agricultural communities, concerns over rehabilitation will continue to be present, but moderated by the type of farming activity and soils for each region. By contrast, the main concerns associated with wind turbines relate to the construction period, after which many activities can resume.

4.3. Project-related factors

Distrust of the mining company, along with the timing and form of stakeholder consultation were central in the development of community perceptions. This echoes findings in the RE literature, which highlight the importance of early and meaningful community engagement (Wolsink, 2007). Two important distinctions for mining developments relate to company history, the company location (endogenous and exogenous), and the company record. Unlike RE findings where embedded local companies are more likely to be accepted by communities (Jobert et al., 2007; Wüstenhagen et al., 2007) we find no direct link between company location and positive community perceptions. Here we find that the history of the mining company was a very important factor in the development of community perception. Since mining is a capital intensive industry, there are generally fewer operators in national markets. This may give mining companies a public profile that is very different to the smaller, less capital-intensive RE industries. We are not aware of any reference to company history in RE literature which may imply that this is specific to capital intensive industries, or companies with a long operational history.

5. Conclusion

Mining is a normalised activity in contemporary Australia: historically present and geographically widespread throughout the country. In interviews, people spoke of their support of the mining industry in general, and their understanding of its importance to the Australian economy. However, on the whole, reactions to the proposed mine were negative. The results revealed a community uncomfortable with the mine plans to date, and the prospect of future development.

Corporate social responsibility and the social license to operate has received ample attention in the literature; however, research on the formation of stakeholder perceptions towards proposed mines has been limited to date. There are clear overlaps with the RE literature including effects on place attachments, visual impacts, timing and meaningfulness of engagement, trust of stakeholder groups, and perceptions of fairness. However, there are also distinct differences including impacts on soils, access to amenities, company history, company location (endogenous and exogenous), and company record. These specificities are important, as direct application of the knowledge related to perception formation for RE projects would result in overemphasis of some factors, and overlooking of other, more important influences.

Given that, to our knowledge, this is the first attempt to examine mining stakeholder perception formation during the planning phase of development, this work reveals that accepting conclusions from other infrastructural development research is problematic due to the differences between the characteristics of mines and RE developments.

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