Employee Turnover as a Sustainability Issue*

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INTRODUCTION

High workforce turnover is a significant issue for the Australian mining industry, particularly the metalliferous sector. Sections of the industry continue to regard high turnover as a normal and unavoidable aspect of doing business, but this ignores the costs and consequences of workforce instability. Ongoing high turnover can threaten the sustainability of individual operations and also makes it more difficult for the mining industry to make a positive overall contribution to the development of social and human capital in the wider community.

The importance of workforce turnover as a sustainability issue has been recognised by the Global Reporting Initiative (GRI) which has included turnover as a core social performance indicator in its *Sustainability Reporting Guidelines* (GRI 2002, p. 52). Currently the International Council of Mines and Metals (ICMM) is working with the GRI to develop an industry-specific supplement. Once this exercise is completed, there will be growing pressure on the minerals industry to report according to these guidelines. It is likely, therefore, that in the near future companies, business units and sites will be expected to present and discuss data on turnover rates as part of the annual reporting process. This, in turn, will lead to increased scrutiny of corporate and site performance against this indicator.

This paper aims to enhance understanding of the phenomenon of high workforce turnover in the mining industry and assist companies and sites to improve retention levels. In the first section of the paper we present data from various sources about the extent and distribution of workforce turnover in the Australian mining industry. This is followed by an examination of the potential costs and consequences of high turnover, focusing particularly on the sustainability implications. The third section makes some practical suggestions about improving the management of workforce turnover and retention in the industry.

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For the purposes of the following discussion, the term 'turnover' refers to employee movements that create vacancies within an organisational unit (Beach et al. 2003: 62). These vacancies may be the result of resignations, transfers, retirements, dismissals, or the completion of fixed term contracts. The critical factor is that the departing employee needs to be replaced, as distinct from those situations where the separation occurs as a result of a position being made redundant.

The paper draws extensively on a recently completed study of workforce turnover at remote mining operations in Queensland and Western Australia, undertaken jointly by the Centre for Social Responsibility in Mining and the Minerals Industry Safety and Health Centre (Beach, Brereton and Cliff, 2003).[1] Both of these Centres belong to The University of Queensland's Sustainable Minerals Institute.

WORKFORCE TURNOVER IN THE AUSTRALIAN MINING INDUSTRY: AN OVERVIEW

A recent survey of managers of 73 underground metalliferous mines in Australia, undertaken by *Australia's Mining Monthly*, reported that half of the respondents identified 'retaining people' as a challenge. Of particular concern to managers was the high rate of turnover amongst professional staff (Roberts 2003). This concern is also reflected in the latest round of annual reports by mining companies. For example, the report for Newmont's Golden Grove operation states that:

> Retention of staff and the social impacts associated with a fly-in-fly-out lifestyle are two of the primary human resources issues at Golden Grove. Retention of staff at the mine, particularly senior mining personnel, proved challenging in 2002 when the mine lost several senior mining people (Newmont, Golden Grove 2002, p 8).

Similarly, WMC Resources, in its most recent Business Performance report, has acknowledged that: 'a key challenge for WMC Resources is attracting and retaining people with the skills, experience and motivation to contribute to business success' (WMC 2002, p 20)

In 2001, Newmont Australia, which operates in the Gold sector, reported turnover rates ranging from 8 per cent to 31 per cent for company employees at its Australian operations (Newmont 2001, p.32).[2] Four of the Newmont sites – all FIFO operations - had rates above 20 per cent. By comparison, in 2002 Anglo Coal reported turnover rates for five Queensland and Hunter Valley operations ranging from 4.5 per cent to 17 per cent, with the overall average being 9 per cent (Anglo Coal 2002, p 9).

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[1] The full report and a summary report can be accessed at www.csrm.uq.edu.au.

[2] The Newmont data relate only to company employees. This almost certainly understates the extent of turnover at sites such as Tanami, where mining operations are carried out by principal contractors.

In 2001 the Western Australian Mines Occupational Safety and Health Advisory Board (MOSHAB) conducted a survey of the health and safety attitudes and behaviours of 4700 employees in the Western Australian mining industry. One of the survey items asked respondents to indicate how long they had been at their current workplace. This is a reasonable proxy measure of the level of employee turnover.[3]

According to the MOSHAB survey, over 30 per cent of the workforce had been at their current site less than 12 months[4], with the gold and nickel sectors having the lowest levels of workforce retention and coal and alumina the highest (MOSHAB 2002, pp. 43, 68, 86). Additional analysis of MOSHAB data showed that turnover was generally higher amongst contractors than mining company employees (Beach et al. 2003, p. 37-38). Surprisingly, there was no consistent difference in turnover rates between fly-in fly-out (FIFO) and residential sites.

Our own study of employee turnover at remote area mines in Queensland and Western Australia found evidence of wide variation between sites (Beach et al, 2003).[5] The average turnover rates of company employees at the seven FIFO sites in the study was 20.2 per cent, with the range being from 9.7 per cent to 28.3 per cent. Some of these sites had, in the past, experienced annual turnover in excess of 60 per cent. The two town-based sites included in the study reported annual turnover rates of 7.8 per cent and 27 per cent respectively (Beach et al 2003, p. 28). At most mines, turnover was higher among professional and managerial staff in general, and higher in mining operations than in the mill and maintenance areas.

Another useful data source is the biannual Australian Bureau of Statistics *Labour Mobility Survey* (ABS 2002), which can be used to make some high-level comparisons between mining and other sectors. The survey does not directly measure turnover, but asks respondents whether they have changed jobs in the preceding 12 months. Mobility is a broader concept than turnover because it includes employees who remain with the same employer and change jobs, and those who have left jobs because they have been made redundant. However, it is reasonable to assume that mobility and turnover will be closely related.

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[3] A new mine, or a mine with a recent expansion, will have a larger proportion of workers who started in the previous 12 months, so the average length of service will be artificially reduced. For these mines, length of service is a poor proxy for labour turnover. However, given the size of the MOSHAB sample, this factor is unlikely to have skewed the overall data to any great extent

[4] The survey used only three occupational groupings. In the largest group (which consisted of operations employees, trades, support and professional staff) 33 per cent of respondents had started in the previous 12 months. Rates for the supervisor and manager categories were 27 per cent and 28 percent respectively. (MOSHAB 2002, pp 43, 66, 68, 86).

The ABS survey can be used to generate two measures: the proportion of employees in an industry that changed jobs in the previous 12 months and the proportion who exited the industry over the same period. Figure 1 plots these two measures for 17 industry categories. It shows that mining had the highest rate of labour mobility of any industry (22 per cent) and close to the highest rate of exits (9 per cent). The only industry with a significantly higher exit rate was the hospitality sector. This is an industry with a large, low-paid, casual workforce, many of whom are unlikely to see the industry as providing long term career opportunities. Mining, by contrast, has a predominantly full-time workforce which is very well paid relative to employees in most other industries.

The industry which arguably has the most in common with mining is the construction industry. As Figure 1 shows, in construction the exit rate in 2002 was only 4 per cent (compared with 9 per cent for mining) and the mobility rate was 13 per cent, compared to 22 per cent in mining.

In summary the available data supports the following conclusions:

- the overall rate of labour mobility in the Australian mining industry is high relative to other sectors
- high turnover is *primarily* an issue for the metalliferous sector
- turnover rates vary substantially between sites, even within the same sectors
- there is growing concern within the industry about the high rate of turnover, particularly in relation to professionals.

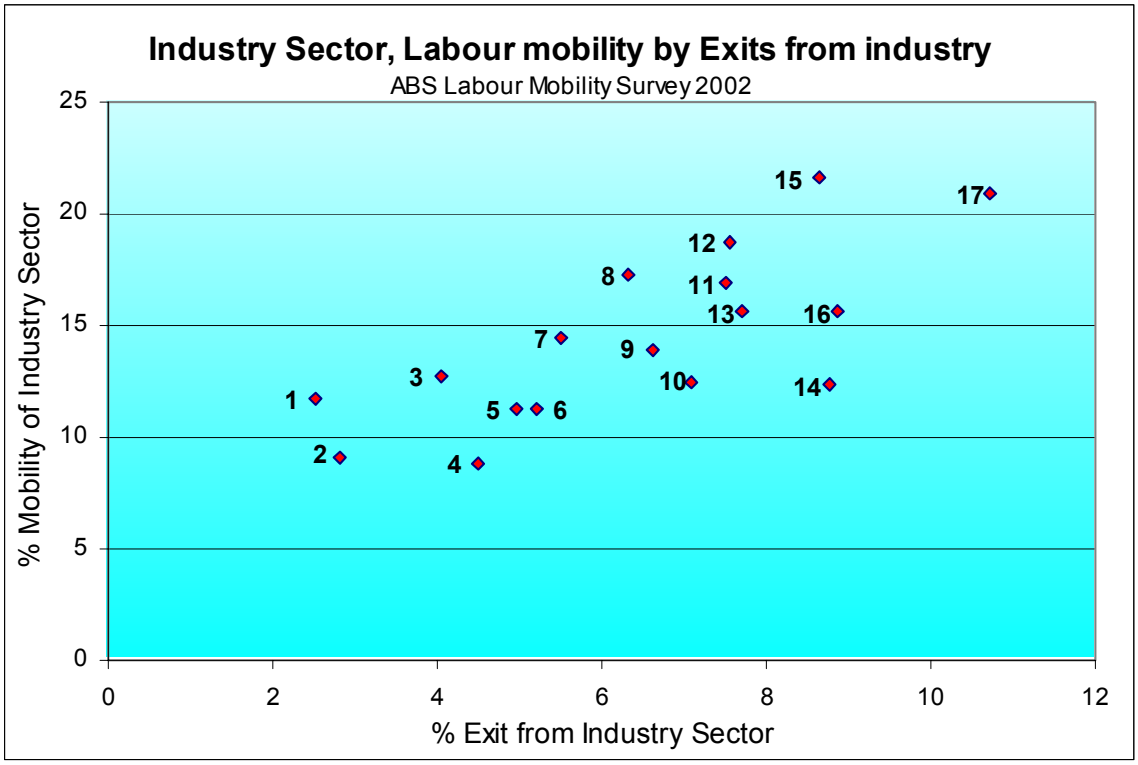

Figure 1: ABS Labour Mobility data (2002) Industry by mobility and exit rate

Legend

No.	Industry (in order of rate of exit from sector)
1	Health and community services
2	Education
3	Construction
4	Agriculture, forestry and fishing
5	Government administration and defence
6	Manufacturing
7	Personal and other services
8	Property and business services
9	Communication services
10	Cultural and recreational services
11	Retail trade
12	Finance and insurance
13	Wholesale trade
14	Electricity, gas and water supply
15	Mining
16	Transport and storage
17	Accommodation, cafes and restaurants

THE MEANING OF 'HIGH' TURNOVER

Determining what constitutes 'high turnover' is a complex issue, because there is not a simple linear relationship between turnover rates and the social and/or economic performance of companies and sites. Too little turnover can be as big a problem as too much. If organisations do not have a reasonable flow through of new personnel, they risk ossification. Also, some turnover is socially desirable because it gives people an opportunity to obtain entry into the labour market and to move to different and better jobs.

Furthermore, what constitutes excessive turnover will vary from sector to sector. For example, the fast food industry is arguably suited to operating with higher rates of turnover than industries such as mining, which have much more expensive human capital inputs. Similarly, within particular industries the impact of a given level of turnover will be greater in some areas than others. Not surprisingly, it is easier for most organisations to manage substantial ongoing turnover in 'base level' positions than amongst professionals and skilled workers.

For the purpose of this paper we have taken a 'grounded' rather than 'a priori' approach to defining what constitutes high turnover in the mining industry. This has involved using information obtained from interviews with industry personnel, and other information sources such as company reports and internal documents, to identify what those within the industry itself regard as a desirable – or at least acceptable - level of turnover. Our assumption here is that experienced personnel within the industry are best placed to make such assessments.

In our study of remote area mines, there was general agreement amongst interviewees that employee turnover above an annual rate of 20 per cent per annum had a significant adverse effect on mine operations. Managers at six sites nominated an 'optimal' turnover rate for their operations, which ranged between 8 and 16 per cent. Newmont Australia, which to date is the only mining company to publicly state a turnover target, indicated in its 2001 sustainability report, *Now and Beyond*, that it was aiming to maintain staff turnover below 11 per cent across the organisation in 2002 (Newmont Australia, 2002: 16). Anglo Coal's latest SHEC report makes it clear that a turnover rate of 17 per cent for a site is regarded a matter of concern. (See, for example, the discussion in the 2002 site report for Moranbah North, p. 2.)

Drawing these different sources of information together, we feel fairly confident in saying that once turnover goes over 15 per cent at a mining site, it starts to move into the high range. Anything over 20 per cent poses a clear threat to the efficient management of a site and, by extension, to its capacity to contribute to sustainable development outcomes.

THE COSTS AND CONSEQUENCES OF HIGH TURNOVER

A key theme of this paper is that high employee turnover is not just a financial cost to business, but also detracts from the ability of companies and sites to make a positive contribution to sustainable development. This argument presupposes that sustainable development principles ought to apply not only to the management of 'natural capital' (that is, the utilisation of physical resources and the management of environmental impacts), but also to the spheres of economic, human and social capital (that is, impacts on people). This broader conception of sustainable development has wide acceptance within the mining industry (for example, see Hooke, 2002:1), although in most instances the human and social components are lumped together under the heading of 'the social pillar' of sustainable development.

In line with this conceptualisation, the following section briefly considers the costs and consequences of high employee turnover under three broad headings:

- financial impacts on sites and companies (economic capital)
- workforce impacts (human capital)
- community impacts (social capital).

This section of the paper is based primarily on our recent study of turnover in a sample of remote mining operations (Beach et al 2003). While some aspects of that study are specific to the FIFO sector, many of the points about the cost and impact of turnover are of broader applicability.

Financial impacts

Continuing high levels of turnover undermine the efficiency and productivity of sites and, in some cases, may pose a threat to their long term survival.

Every time an employee leaves and has to be replaced, an operation incurs a number of direct financial costs, including:

- separation costs (administration costs associated with processing resignations and dismissals, time taken up in conducting exit interviews, productivity losses associated with impending departure)
- vacancy costs (lost productivity and/or additional costs such as overtime or contractor payments to cover for vacancies created by departures)
- recruitment costs (advertising, employment of job search agencies, time and resources spent in processing applications, staff time involved in selection interviews, travel costs for short-listed candidates and re-location costs for successful applicants and their families)
- training and start-up costs (the time of trainers and staff and of new employees taken up in inductions and on the job training, loss

of productivity until the new employee reaches full production potential).

None of the participating sites in the study tracked the cost of employee turnover; nor could our interviewees estimate the full cost of employee turnover with any confidence. There was, though, a broad awareness that these costs could be substantial, as the following comment from one of the interviewees illustrates:

> *Turnover has been as high as 33 per cent. Over 20 per cent you never get a return on your investment. Inductions and safety training are the most expensive – there's a whole week's salary gone in that alone. Also you get increased contractor costs. You double your training costs 'cause you've got to do the basic training for the contractor filling in and the permanent replacement when they turn up.* (HR Superintendent, town-based mine)

In the words of another manager:

> *For every job that's available they will shortlist three or four for an interview. Then there's the time taken up with finalising the recruitment process (medicals, accommodation on site), then there's the time in training and induction (basic first aid, risk assessment, drug and alcohol policy) this takes up managers and superintendents time, then, depending on their skill level, it'll take six months to a year before they're integrated into the (site) culture and operating 'at a higher level'.* (HR manager)

In addition to these direct costs, high turnover can adversely affects operational efficiency, especially for complex processes that require close teamwork and high amounts of assumed knowledge. Where there is continuing instability in the workforce, consequences can include increased stress and tension amongst those remaining employees who have to fill the gaps left by departing employees, declining employee morale, and decreased productivity due to loss of work group synergy (Pinkovitz, Moskal et al. 1997). In addition, new employees take time to reach full effectiveness and are likely to be more error-prone than their experienced counterparts. According to one study, staff turnover, acquisition, and assimilation rates can extend a project's cost and duration by as much as 60 per cent (Abdel-Hamid 1989). In a worst case scenario, the outcome of continuing workforce instability can be a negative workplace culture of distressed, under-functioning employees which then affects new recruits in a self perpetuating manner (Reese 1992 in Boshoff and Mels 2000).

No research has been conducted specifically on the costs of turnover at mining operations, but based on studies from other industries (where replacement costs are likely to be lower in many instances)[6] it is reasonable to

[6] Many mining operations are based in relatively remote locations, meaning that higher travel, accommodation and orientation costs will often be involved. Additionally, there are extra costs associated with lost productivity due to the use of 12-hour shifts and long work patterns in the

assume that it will cost at least 30 per cent of annual salary to replace a 'base level' employee, rising to around 150 per cent of annual salary for professionals and managers (Abbot, De Cieri et al. 1996; Phillips 1990; Tziner and Birati 1996). On this basis, we have estimated the annual cost of employee turnover at a 'typical' FIFO mine with 300 employees as somewhere in the order of $2.8 million (see Appendix One for more detail). This estimate is based on conservative assumptions about salaries and replacement costs; it does not include impacts that are difficult to quantify, such as diminished employee morale and loss of local knowledge.

A reduction of, say, 25 per cent in a site's turnover rate would not necessarily produce commensurate cash savings. Some costs, such as the cost of running a HR section, are largely fixed. In addition, the cost of implementing measures designed to increase retention would also have to be factored into the equation. However, these rough costings highlight the drain that turnover can have on operational resources and the potential benefits to be derived from devoting greater management attention to the issue.

Impacts on human capital

The OECD has defined 'human capital' as: 'the knowledge, skills, competencies and attributes that facilitate the control of personal, social and economic well-being' (OECD 2001:18). Companies can contribute to the growth of human capital by developing the skills and competencies of their employees, providing new entrants into the labour market with long term employment opportunities, ensuring a healthy and safe workplace, and supporting education and training initiatives in the wider community (for example, providing scholarships to local schools). Conversely, companies will have a negative impact on human capital development when, amongst other things, they: adopt practices and policies which contribute to the de-skilling of their workforces; tolerate unsafe workplaces; engage in labour practices which discourage people from remaining in the workforce; and concentrate on 'poaching' experienced employees from other companies rather than enhancing the skills of existing personnel.

Where there is ongoing high turnover, human resource development is less likely to be a priority for management. Companies will be disinclined to invest in training and career development for staff if they believe that they cannot hold staff. In addition, where there is high employee turnover human resource personnel are likely to be pre-occupied with the 'base level' tasks of recruiting and training new staff. This, in turn, means that there will be fewer opportunities to implement staff development initiatives and other strategies that could enhance the skills and productivity of existing employees. As one HR manager who we interviewed commented: "Higher than 20 per cent and

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mining industry. A position that remains unfilled on a 56-hour a week roster costs a company more in lost productivity than the same vacancy on a 40-hour a week roster.

then HR capabilities are stretched for recruitment and training. We have a small team here."

Over the longer term, ongoing high turnover – especially if it is associated with people leaving a region or the industry – can contribute to chronic shortages of skilled and experienced personnel, not just at specific sites but also within the sector more generally. This is already being experienced on some sites.

> *There is a shortage of talent in the professional underground mining and engineering areas. Trades such as mechanical and electrical, and technicians are also at a premium … The industry needs to recognise that the demographics of our industry have changed markedly and our industry is under threat as a result of an aging workforce and a limited talent pool* (Mine Manager comments in Roberts 2003, p39).

It can be argued that a positive spin-off of high employee turnover is the creation of opportunities for people who may previously have been unemployed, or working in less well paid jobs, to obtain positions in the mining industry and thereby acquire the skills and experience which would enable them to stay in the industry. However, unless these new entrants can be retained in mining and their capabilities developed, the long term benefits – in terms of building the stock of human capital in a community or adding to the industry workforce - are likely to be fairly negligible.

Health and Safety Implications

High rates of workplace turnover also have the potential to undermine safety standards. This is because: (a) there will be a greater proportion of recent recruits within the workforce, with consequent communication lapses creating more opportunities for error; (b) the constant concern of human resources personnel with covering for and replacing departing employees reduces opportunities for advanced safety training and refresher training; and (c) it is inherently more difficult to build and communicate a positive safety culture if the composition of the workforce is constantly changing. Whether these factors actually translate into increased safety risks at particular workplaces will depend on a number of considerations, including the quality of local control systems and the extent to which site management is focused on safety issues. However, there seems little doubt that an unstable workforce adds to the challenges involved in maintaining a safe workplace.

Our own study identified instability in the contractor workforce as a particular area of concern from a safety perspective. At one mine, a sub-contractor's employee turnover rate was so high that it posed an unacceptable drain on health and safety training resources for the mining company. This resulted in the sub-contractor being threatened with loss of the contract unless employee retention was improved.

> *Safety standards for contractors are lower than for (the company). So there is a continual process of training new contractors up to company standard. Stability of the contractor workforce is very*

important for mine companies to get value for the investment in training.

There is currently a continuous process of training people into new positions, because people leave. A (subcontractor) project manager's contract is for five years, but they turn over every 2½ years. (Mine training and safety officer)

At another site, one sub-contractor had used casual labour hire employees to such an extent that each time the sub-contractor came on site an entirely new group of workers arrived. These workers needed to be inducted onto site. The subcontractor employees did not know the site and the permanent employees did not recognise subcontractors. The constant change of personnel led to a serious safety incident. In response, the mine company instigated a policy of asking for subcontractors to send the same personnel to site for future work.

Impacts on social capital

According to the OECD, the concept of social capital denotes: 'networks together with shared norms, values and understandings that facilitate co-operation within or among groups' (OECD 2001, p. 41). Communities with high levels of social capital are characterised by 'thick networks', high rates of participation in community activities and strong mutual support systems. Ways in which companies can make a positive contribution to social capital include by sponsoring community development initiatives and by facilitating employee participation in community organisations and activities. Conversely, companies undermine the development of social capital when they implement workforce management practices that discourage or hinder such involvement.

In small mining towns, high turnover will have a major impact on population stability. This is because employees and their families generally leave the town once the job has come to an end. Conversely, new employees often have to be sourced from outside the local areas. These 'immigrants' may, in turn, not see themselves as long term members of the community. Where populations are fluid, it is more difficult to build and maintain a sense of community and to sustain activities such as clubs and associations, which contribute positively to the social and civic life of the community.

Population instability will be less of an issue in the case of FIFO operations, because employees are usually based in a city or a large provincial centre and can often switch jobs without needing to re-locate their residence (for example by moving to another FIFO operation in the same region or a town-based position). However, in other respects FIFO operations also have the potential to weaken social capital, by hindering the involvement of employees in organised community activities.[7]

[7] In a survey conducted by The AusIMM 69 percent of respondents working FIFO rosters reported that the lifestyle hinders their participation in social, sporting and community activities (Venables, et al 2002).

The Costs and Consequences of High Turnover: Summary

In summary, the negatives associated with high workforce turnover include:

- high ongoing recruitment, replacement and training costs
- decreased productivity due to loss of site specific knowledge and work group synergy and declining morale amongst remaining employees
- reduced capacity to develop workforce skills and build human capital
- increased difficulties in establishing and maintaining a positive safety culture
- greater population instability in mining communities and a potential weakening of the social capital of these communities.

IMPROVING THE MANAGEMENT OF TURNOVER

Although high turnover is now on the 'radar' of some companies there is little evidence, as yet, of a concerted effort being made within the industry to address the problem. By and large, the mine managers who we interviewed for our study did not see management and containment of employee turnover as a high priority. This was despite the fact that several sites had turnover rates above the level of what the managers themselves considered desirable. Instead, there was a tendency to see high employee turnover as normal and largely outside management control.

A critical first step in improving retention rates is to get site-level and corporate managers to give the issue greater attention. Companies need to be communicating to sites that containment of turnover is a corporate priority and support initiatives aimed at increasing retention. In some instances, this will require a shift from a narrow focus on short-term cost containment to a broader focus on effective management of human resources.

Development of a standardised method for costing turnover will help to focus site attention on the issue. In addition, it is important to publicise examples of good practice in the area of workforce management, in order to dispel the view that turnover is driven by factors that are largely beyond the control of management. For example, in our study, two of the FIFO mines had managed to keep turnover well below 15 per cent, notwithstanding the inherent challenges of retaining employees for a long period at a FIFO operation. Case studies that documented how this had been achieved, and the benefits which flowed from workforce stability, might prove to be very useful in swaying the doubters.

The next step is to identify *cost effective* retention strategies that can be implemented at site level. This is quite a complex task, as decisions by employees to leave (or remain at) a workplace will be influenced by a wide range of factors, including:

- the employee's personal aspirations

- the culture and management style of the workplace
- the nature of the work
- comparative remuneration levels
- the availability of internal promotion opportunities
- the extent to which work arrangements (eg rosters, hours worked, amount of travelling required, absences from home) are compatible with the employee's home life (Beach et al. 2003, p. 18-20).

The relative significance of these different factors will vary not only between individuals, but also across sites and between occupations. For example, roster design appears to have a significant impact on turnover in FIFO operations, but may be of less relevance for explaining turnover at town-based mines, where rosters are typically shorter. Similarly, the availability – or lack – of promotional opportunities is likely to be of greater concern to professional staff than employees in base level operational positions.

Given the diversity of factors that can impact on employee turnover, care must be taken not to adopt a 'one size fits all approach', or to make assumptions from the outset about what is driving turnover at a particular site. Rather, the problem needs to be analysed on a site-by-site basis and the solutions tailored to local circumstances. For example, it may be that the high rate of employee turnover at one town-based mine is due largely to dissatisfaction with the quality of housing and services available. At another mine, the primary source of the problem may be a poor workplace culture. Determining which of these factors are most important requires systematic information gathering. The views of local management about the causes of the problem, while providing a useful starting point, should most definitely not be accepted at face value.

There are many competing demands on the time and attention of site-level management. Sites experiencing high turnover therefore need to be provided with resources and strategic support to help them improve their performance in this area. An appropriate role for corporate HR in this regard could include: assisting sites to improve their data capture and monitoring systems; conducting site-level reviews (or arranging for others to do so); undertaking evaluations of new retention initiatives; and, ensuring that any learnings are disseminated throughout the organisation.

A key issue for management is to determine what constitutes an acceptable range of turnover – not only for sites as a whole, but for specific occupational groups and mine sections, and for contractors as well as company employees. This should be negotiated with local management, rather than being imposed by executive decree, and the process should be sufficiently flexible to allow the 'range of acceptability' to vary across sites. (For example, a somewhat higher range may be tolerated for FIFO operations than mines located close to established communities.) As noted above, there is no magic formula for determining how much turnover is 'acceptable', but a good starting

point is what local managers themselves regard as the point at which turnover begins to have an adverse impact on operational efficiency.

Finally, there is a clear need to improve monitoring processes at site level. Surprisingly, most of the sites in our study gave little attention to collecting and analysing human resources data:

- site management generally made only limited use of turnover data, information from exit interviews and demographic data
- while there was a broad appreciation that the financial cost of turnover could be substantial, no site had quantified or tracked these costs
- turnover amongst employees of contractors was not tracked
- most sites did not monitor employee satisfaction levels in any formalised way
- recruitment strategies were generally not evaluated in terms of their impact on employee retention.

With some relatively simple improvements to existing information systems and data capture processes, it would be possible to substantially improve the quality and quantity of information available to managers at both site and corporate level.

In parallel with the implementation of improved management practices, there needs to be a greater effort made on the research front. Issues relating to the turnover and its management have been addressed extensively in other industries, but very little research has focused specifically on turnover in the mining industry. Moreover, findings from these other studies may have limited applicability to the mining sector, given the unique features of the industry (such as the remote location of many mines, the widespread use of continuous shifts, and the growing reliance on FIFO operations in the metalliferous sector).

Specific issues that require further investigation include:

- reasons for the current high rate of turnover amongst professional and managerial personnel in the metalliferous sector of the industry
- the causes and consequences of turnover amongst employees of contractors
- the potential impact of management style and local workplace culture on site turnover
- the impact of roster design on turnover.

In addition, more work needs to be done on refining methods for valuing the direct and indirect costs associated with turnover. This would help to support management decision making at the site and corporate level and, as indicated, would assist in the evaluation of strategies for reducing turnover.

CONCLUSION

Workforce turnover in the mining industry is a complex and important issue. High turnover not only impacts on the cost effectiveness of mining operations, but has negative implications for the development of human and social capital. As companies move to align their reporting practices with the GRI, their workforce management practices will be increasingly scrutinised by external stakeholders. It is therefore clearly in the interests of the industry to take a more pro-active approach to the management of employee turnover. For this to occur, there needs to be greater appreciation of the costs and consequences of high employee turnover, and a willingness to change established personnel management practices at both corporate and site level. There are promising signs that the issue of turnover is now on the agenda of some companies, but a lot of work remains to be done if the industry as a whole is to improve its performance in this area.

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APPENDIX 1

An illustrative estimate of the financial cost of employee turnover

We estimated the cost of average employee turnover at a hypothetical mine with 300 employees. We assumed;

- the mine is owner operated, open-cut and a 14/7 FIFO roster
- the pattern of employee turnover across mine sections is consistent with the MOSHAB published averages for operators, supervisors and managers
- there is lower employee turnover within the minerals processing and maintenance areas than in the mining area
- conservative annualised salary figures.

Table 1: Estimated employee turnover costs for an average mine of 300 employees

Mine area (no. employees)	Annual salary	Turnover rate	no. exits	cost per exit	total
Operations (140)	70,000	19.6%	27.5	$21,000	$577,500
Processing and other personnel (90)	75,000	15%	13.5	$37,500	$ 506,250
Supers (10)	80,000	15%	1.5	$80,000	$120,000
Management & Mine Professionals (60)	90,000	19.6%	12	$135,000	$1,620,000
Total turnover budget (300 employees)					**$2,823,750**

Mine operations 30 per cent of employee annual wage
Processing and other 50 per cent of employee annual wage
Supervisors 100 per cent of annual wage
Management and mine professionals 150 per cent of annual salary

Cost estimates for senior positions are based on the available literature (Abbott, De Cieri & Iverson 1996, Cascio 1982). Cost estimates for mine operators are based on discussions and feedback from participating company and site personnel.