

## METHODOLOGY AND DATA ANALYSIS

### Quality of Working Life and Family Impact Surveys

#### *(i) Questionnaires:*

Two survey instruments were used to collect data relevant to the study, the Quality of Working Life survey and the Family Impact Assessment questionnaire. Both were devised by the author(s) from previous industry and field research and in accordance with the restrictions of the study.

The Quality of Working Life surveys administered to the 7 mine sites involved in the study slightly varied between mines. For some mine sites a small number of questions were not included in the survey instrument. Primarily this was due to the individual mine sites discerning that these particular data items were irrelevant or not appropriate for the analysis of that mine. When the responses from the individual mines were combined to generate an overall understanding of working and family life in the industry these responses were blank for those mines resulting in a lower respondent number for those questions.

Both the Quality of Working Life and Family Impact Surveys consisted of open and closed ended questions. Open ended text questions allowed participants to express their views in an unrestricted way. An example of one such open-ended question from the Quality of Life Survey was – *If you could change three things about your current roster, what would they be?* Closed-ended questions required participants to tick one answer of a specified range given to answer the question. An example of a closed-ended question from the Family Impact Assessment survey was – *Our family understands the need for my partner to work the roster that he/she does.* This was answerable by respondents checking one response from a four point likhert scale ranging from 1 = strongly disagree to 4 = strongly agree. Both open-and close ended questions were coded for analysis.

#### *(ii) Participants:*

##### **Quality of Working Life Survey:**

The Quality of Working Life Survey was administered to workers at seven mine sites across Tasmania, with a focal point of processing workers. The surveys were administered on-site between November 2001 and January 2002.

Initially a total of 598 Quality of Working Life surveys were collected from the seven sites involved in the enquiry. An analysis of the number of respondents completing the surveys across the mines revealed data collected from one of the mines exhibited a very low response rate. Concerns that this sample was not representative resulted in the decision to remove data from this mine from the overall analysis.

As the central interest within this report was processing employees, post initial collection 92 respondents from the remaining sites who identified themselves as working within other areas were removed from the analysis. Respondents were removed if:

- a) They stated the job/task they spent most of their time doing was management, administration office-technical or office-other services (included stores, engineers and emergency services staff etc) and/or
- b) They identified the main job they spent time doing was within the office area.

Following the removal of office/non-pure processing staff and responses from the low response rate site, a total number of 464 participants were used in the analysis of the Quality of Working Life Questionnaire. Table 1 shows the final response numbers from each of the mines used in the analysis.

**Table 1: Respondent Numbers Quality of Working Life Questionnaire**

Mine Site	Frequency	Percent	Cumulative Percent
Mine 1	80	17.2	17.2
Mine 2	73	15.7	33.0
Mine 3	39	8.4	41.4
Mine 4	47	10.1	51.5
Mine 5	130	28.0	79.5
Mine 6	95	20.5	100.0
Total	464	100.0	

Due to a non-response of participants on some questions in the survey the number used in the analysis may vary between data items.

**Family Impact Assessment:**

The Family Impact Assessment Questionnaire was administered to the partners/families of workers at the seven Tasmanian mine sites of interest. The data collection method varied across the different sites. At some sites the employees took the surveys home to their families, others were mailed to families from address lists provided by the mine site.

For consistency the 7<sup>th</sup> mine site removed from the analysis for the Quality of Working Life survey was also removed from the Family Impact study as it was felt the low response rates made this sample not representative.

The family impact survey did not ask partner’s to specify the job area the employee worked. As such, the office/non-pure processing and the processing staff were both included in the analysis as it was more difficult to discern between them. This, and the different survey collection methods used at the mines, made response rates difficult to calculate.

A total of 270 Family Impact Assessment Questionnaires were returned from the families of workers from the six sites and were used in the analysis. Table 2 shows the response numbers received from each of the sites.

**Table 2: Respondent Numbers Family Impact Assessment Questionnaire**

Mine site	Frequency	Percent	Cumulative Percent
Mine 1	39	14.4	14.4
Mine 2	42	15.6	30.0
Mine 3	21	7.8	37.8
Mine 4	52	19.3	57.0
Mine 5	75	27.8	84.8
Mine 6	41	15.2	100.0
Total	270	100.0	

Due to a non-response of participants on some questions in the survey the number used in the analysis may vary between data items.

***iii) Response Rates and Weighting***

**Response Rates:**

Table 3 shows the response rate for each of the mines used in the Quality of Working Life Survey analysis. It indicates that the response rate was fairly standard across all mines, ranging between 68% and 82% with the exception of mine four which had the lowest response rate of 47% percent.

**Table 3: Response Rates Quality of Working Life Questionnaire**

Mine Site	Sample Size of Processing Workers in Mine	Population of Processing Workers in Mine	Response Rate
Mine 1	80	97	82%
Mine 2	73	89	82%
Mine 3	39	48	81%
Mine 4	47	101	47%
Mine 5	130	168	77%
Mine 6	95	140	68%
Total	464	643	

Difficulty in calculating exact response rates for the Family Impact Survey was encountered. This was primarily due to the different survey collection methods at each of the mines and being unsure of whether every family received the survey. This may have been due to some mailing lists being outdated and so forth. In addition within the Family Impact Survey we were unable to distinguish between processing and office workers.

It is estimated that the overall response rate was between 40 and 50%. Due to the difficulties in obtaining exact response numbers the Family Impact Assessment data was un-weighted.

## **Weighting**

The Quality of Working Life data was weighted using one of two different types of weights. An expansion weight was applied when analyzing frequencies. This was undertaken so trends representing population estimates could be portrayed, and as uneven questionnaire response rates were obtained across the mines, to correct the proportionality (n=643). When undertaking significance testing an effective sample sizes weight was employed to capture the change in proportionality whilst also maintaining the sample size (n=464).

## **Recoding**

Respondents were grouped into four different roster types: even-time rotating roster 42+ hours per week, rotating roster 56+ hours per week, other rotating roster 50+hours per week, and permanent dayshift 40-60 hours per week. These categories allowed for the confidentiality of the mines to be maintained yet still allowed for meaningful analysis.

Responses to a number of questions in both the Quality of Working Life and Family Impact Assessments were collapsed into smaller answer ranges to both yield more meaningful responses and to overcome small cell counts in some cases.

The largest recoding was undertaken in the Quality of Working Life Survey for the main job/task respondent spends most of their time doing across the shift. The following response options were available to respondents and were collapsed into the following categories:

<b>Job/Task Undertaken</b>	<b>Collapsed categories</b>
Truck	Truck
Crushing/Shaft/7LHaulage	
Bogger	Bogger
Jumbo Operating	Jumbo Operating
Grader	Underground Other
Airleg	
Nippering	
Charging/Sealing/Charge-up	
Longhole Drilling	
Simba Drilling	
Services	
Grinding Operator	
CIL Operator	
Detox Operator	
Front End Loader	
Mill Operation	
Floatation Operator	
Filtration Operator	
Lab	
BacOx	
Cyanidation	
Gold Room	
Control Room	
Fitter/Diesel Fitter	Workshop/Maintenance
Boilermaker/Welder	
Mechanic	
Electrical	
Trades Assistant	
Contractor	
Management	Office – Respondents selecting this response were removed from the analysis
Administration	
Technical	
Other Services	

**Further variables that were recoded in both surveys included:**

- (i) Age of children. Responses were broken down into:
  - a. *No Children*
  - b. *Children aged 0-18*. Respondents who had children who were under and over 18 were included into this category
  - c. *Children all over 18*

(ii) Marital Status. Responses were recoded into:

- a. *Partner*: Included respondents who were married or in a de-facto relationship
- b. *No Partner*: Included respondents who were single, widowed, divorced or separated.

(iii) Pattern of Sleep. Responses for dayshift, nightshift, and days off were recoded into:

- a. *Refreshed*: Included respondents stated they had
  - i) Good quality sleep, long stretches, feel refreshed or
  - ii) Broken, short sleep but do feel refreshed or
  - iii) Normal sleep, feel refreshed.
- b. *Unrefreshed*: Included respondents who were
  - iv) Broken, short sleep and do not feel refreshed or
  - v) Have trouble getting enough sleep, restless when sleeping and always tired.

(iv) Hours of Sleep. Responses dayshift, nightshift, and days off were recoded into (occasionally these were grouped differently):

- a. *5 or less hours sleep*
- b. *6 or more hours sleep*

**Variables only contained in the Quality of Working Life Survey and recoded:**

(v) Rotation: How many hours do you usually spend continuously doing the same job or operating the same piece of equipment across one full shift. Responses were recoded into:

- a. *Less than 6 hours*
- b. *More than 6 hours and less than 10 hours*
- c. *More than 10 hours*

(vi) Control: Who has control of how and when you rotate on equipment or between jobs. Responses were recoded into:

- a. *No Control*: Respondents who stated 'the shift supervisor'.
- b. *Some Control*: Respondents who stated 'the crew members in consultation with the supervisor' and 'the crew members organize it themselves'
- c. *Significant Control*: Respondents who stated 'I have significant control over the organization of my own work'.

(vii) Alcohol Consumption: How many days per weekly period do you do you usually have a drink containing alcohol was recoded into:

- a. *Not weekly but occasionally*
- b. *1 day*
- c. *2-3 days*
- d. *4-6 days*
- e. *Everyday*

(viii) Alcohol Consumption: How many standard drinks do you have working dayshift, nightshift and days off was recoded into:

- a. *None*
- b. *1 or 2*
- c. *3 or 4*
- d. *5-9*
- e. *10 or more.*

(ix) Smoking: How many cigarettes currently smoked on work and non-work days was recoded into:

- a. *Less than 10*
- b. *10-20*
- c. *More than 20.*

**A variable only contained in the Family Impact Assessment Survey and collapsed:**

(x) Recovery: Recovery time needed after day and nightshift work blocks to return to normal energy levels. Responses were recoded into:

- a. *12 hours or less*
- b. *24 hours*
- c. *36 hours or more*
- d. *Does not regain energy levels.*

In addition to the recoded data above, a number of data items within both questionnaires were answered on four or five point likhert scales similar to:

- 1 = Never
- 2 = Rarely
- 3 = Sometimes
- 4 = Frequently
- 5 = Always

In order to more meaningfully communicate the data and to reduce the number of small cell counts found for some questions some of these likhert scales were collapsed into two or three point ranges.