

Siobhán Leyne  
Inquiry Secretary  
Standing Committee on Regional Australia  
PO Box 6021  
Parliament House  
CANBERRA 2600

Dear Inquiry Secretary,

Please find enclosed our submission to the APH House of Representatives Inquiry into Inquiry into the use of 'fly-in, fly-out' (FIFO) /Drive in, Drive Out (DIDO) workforce practices in regional Australia.

We would be happy to supply additional material and make ourselves available to the committee in person.

Yours truly

*Professor Kerry Carrington*

**ARC Research Team**

*on behalf of the ARC Research Team*

Professor Kerry Carrington, School of Justice, QUT,  
Associate Professor Russell Hogg, UNE,  
Professor John Scott, UNE  
Dr Alison McIntosh, QUT/UNE

7 October 2011

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## Inquiry into the use of 'fly-in, fly-out' (FIFO)/Drive-in, Drive Out (DIDO) workforce practices in regional Australia.

### 1. Background

- 1.1 Australia is experiencing an unparalleled resource boom due to intense demand from Asian economies thirsty for Australia's non-renewable fossil fuels (Cleary, 2011, p. vii). In this global context, and with the backing of state governments eager to generate revenue through royalties, mining companies have launched a multi-billion dollar investment stampede<sup>i</sup> to extract Australia's natural resources, with mining projects operating a continuous production cycle of twelve hour shifts, seven days a week. The haste of this extraction process has become increasingly reliant on fly-in, fly-out or drive-in, drive-out (non-resident) workers who typically work block rosters and reside in work camps that are often located adjacent to or near existing rural communities. There has been little research on the impact of mining developments reliant on non-resident workforces on rural communities. Significant social impacts of these practices have generally escaped industry, government and academic scrutiny.
- 1.2 Some background features of the (r)evolution that has occurred in NRW arrangements within Australia's resources sector and that we consider are relevant to the inquiry follow.
- 1.3 NRWs in resource activity towns sometimes (increasingly) represent large proportions of local area populations. Essentially this sector's organization for NRWs is differentiated from other non-resident work involving periodic absences from home by its regular pattern of extended work on-site (or in close proximity to the workplace) with accommodation provided in work camps or other single person quarters.
- 1.4 Fly-in fly-out (FIFO) workforce practices were initially employed in WA during the 1970s by the more remote open-cut gold mining operations, generally those with small, often low-grade, ore body and hence short expected mine life.
- 1.5 Particularly during the late 1980s and early 1990s, use of FIFOs and other forms of non-resident workforces has grown to the extent that it has become the preferred system.
- 1.6 Federal government policies play an important role notably with respect to fringe benefits tax (FBT) and capital gains considerations. It appears that the taxation structures penalize companies who opted for resident employees rather than NRWs.
- 1.7 In more recent years and especially during the last decade, resource developers of new operations in or near existing established settlements have also adopted non-resident workplace arrangements while some existing operations have changed their workforce, in whole or in part, from residential to non-residential.
- 1.8 Requirements for resource developers to invest in towns affected by mining operations have diminished over time. Mine longevity and market factors no longer appear to influence decisions about regional workforces. This apparent lack of leverage towards regional settlement is puzzling given that there are many examples of regions with more than 50 years of continuous resource project operation and with several future decades of production intended.
- 1.9 The cumulative impact of multiple project developments by numerous organizations within the same region should be an important consideration.

- 1.10 Even in the unlikely occurrence of the current resource boom and new project development ending tomorrow, demand for product from existing projects would continue for many decades to come.
- 1.11 Prior to the widespread and rapid adoption of non-resident workforce arrangements, governments expressed concern that problems could be created if new projects opening up within a region warranted encouragement of a regional workforce. In hindsight this is what has occurred.
- 1.12 In parts of regional Australia, NRWs housed in work camps have become the proxy resident population, sometimes rivaling in number the residents in established host communities.
- 1.13 Non-resident workforces could not have occurred without other changing employment practices including 12-hour shifts within rosters with extended work cycle. In fact, block rosters were facilitated by changes to Australia's workplace regulatory frameworks during the 1990s and have been introduced with increasing momentum since then.
- 1.14 No organisations or governments cost or talk about the environmental costs of transporting tens of thousands of NRW around Australia every week of every year for many decades to come. Perhaps this issue should be addressed in Environmental Impact Statements prior to mine approval.
- 1.15 Accommodating NRWs in regional and remote towns without providing adequate accommodation and other forms of services and infrastructure appears to be damaging the tourism industry of many regions.
- 1.16 This submission is informed largely by our ARC Discovery research project *Safeguarding Rural Australia: Addressing Masculinities and Violence in Rural Settings* (2008-2011) which set out to study reasons underlying the high mortality and morbidity rates for violent related harms among men in rural Australia. We did not intend to study mining communities, but our initial triangulation of data (mortality and morbidity data, accident data, recorded crime, etc) identified some high risk regions in WA and Qld where significant mining activity was occurring<sup>ii</sup>. When we undertook community studies of those areas (143 interviews with key stakeholders and community representatives), it became apparent that the housing of thousands of mostly men working as FIFO or DIDO workers in the minefields near those communities was having profound social and criminological impacts (see Carrington et al., 2010; Carrington et al., 2011. forthcoming; Carrington and Hogg, 2011; Carrington and Pereira 2011a, 2011b). While the study of the impacts on non-resident workers and their families was outside the scope of the research, it also became apparent that these workforce arrangements were having adverse impacts on the health and wellbeing of non-resident workers and their families as well. The effects of resource sector workforce practices involving the use of FIFO and DIDO non-resident workers thus became central to many of the issues discussed in our final ARC report.

## **2. Definitions – Non-Resident Workforce**

- 2.1 Non-resident work arrangements are also known as long distance commuting (LDC) or, alternatively, 'commute mining' (Storey, 2001). 'Contractor' has also become synonymous for these workers in some locations as use of principal contracting companies, third-party contractors and contract labour by resource developers for all facets of their activities gains currency. Workers are also bussed-in, bussed-out (BIBO) and some are even transported by vessels such as ferries (ship-in ship-out or SISO). For example, the latter procedure is

intended for workers who will be accommodated during the work cycle days of their extended rosters on Curtis Island, the site of the LNG processing plants adjacent to Gladstone with this practice to apply even for those workers whose 'home', where they will return for leave cycle days, is just a short ferry ride from Gladstone.

- 2.2 Many of the issues with non-resident workforces that we have encountered during our research do not arise solely because of the long distances travelled for the work cycle of rosters. Rather they are linked to a range of other factors including workers' lack of identity with, concern about, and commitment to 'host' communities and also the extended periods of separation from their homes and 'source' communities. We respectfully suggest, therefore, that the terms FIFO and DIDO inadequately capture the complexity and variety of work practices and arrangements for those who travel away from their homes for extended periods of work. **'Non-resident worker'** (NRW) is increasingly used within the academic literature to denote these rapidly evolving labour force practices and, accordingly, this terminology has been used in our submission.
- 2.3 Our comments are limited to the non-resident workforce cohort in Australia we understand best: that directly employed by the resources sector which we believe is overwhelmingly the largest current and projected user of these workforce practices. This includes workers employed not only in mining operations (that is, for mining and extraction, as identified under the Australian and New Zealand Standard Industrial Classification (ANZSIC)) but also those directly employed by the resources sector in other activities such as surveying, construction, transportation, processing, maintenance, work camp accommodation, catering, cleaning and security.

### 3. Terms of Reference 1

#### The extent and projected growth in FIFO/DIDO work practices, including in which regions and key industries this practice is utilised

- 3.1 **Problems with quantifying numbers of NRWs.** Identifying the current extent of NRW practices in Australia is impossible for anyone to quantify accurately, and projected growth is equally elusive. Data are not collected about NRWs in any form by the ABS or other federal government organisation or department. Even if Census data were available with respect to NRWs, single point-in-time information once every five years is insufficient for gauging current practices about NRWs, especially during boom conditions (See Box 3.1).

#### BOX 3.1

##### What we are told/not told by the ABS

- August 2011 ABS Labour Force statistics: 216,800 workers in 'mining'
- 87.4% of 'mining' workers were males; worked an average of 46.1 hours/week
- Females comprised 12.6% (a decrease from 15.7% in November 2010); worked an average of 39.1 hours/week
- This excludes construction and maintenance workers and those employed in processing, surveying, transport, accommodation, catering, cleaning security...
- Data about non-resident workers are not captured for any timeframe
- Single point-in-time data (e.g. from the Census) would be insufficient by itself.

**3.2** Due to identified constraints in accessing quality data<sup>iii</sup>, we limited our attempts to quantify numbers of NRWs to the Pilbara Region of Western Australia and those regions in Queensland with abundant coal and coal-seam gas supplies. Of course, resource sector activities involving NRWs are also occurring in other regions and in other states. For example, work camps have been established in traditional farming regions of WA such as the Central West and Great Southern Regions. In NSW, camps for NRWs have been/are being constructed within or proximate to prime agricultural lands of the Liverpool Plains and valuable farmland between Narrabri and Moree.

**3.3** In the absence of definitive data, we estimate NRWs directly employed by the resources sector at this time to be at least 150,000 and perhaps closer to 200,000. Box 3.2 lists elements of the workforce considered for the compiling of this estimate. These numbers are based on our investigations and understanding of activities and on government and industry publications of possible proportions of NRWs (see, for example, NRSET, 2010; OESR, 2011; Rolfe et al., 2010).

#### **BOX 3.2**

**Estimates for numbers of NRWs (on work and leave cycles) in regional Australia directly employed for existing resource project activities** including mining, oil and gas extraction, construction, surveying, transportation, processing, maintenance, work camp management, catering, cleaning, security, travel for shift work onsite.

- Operational: 60%? of 216,800 (ABS, August 2011): 130,000
- Construction – essentially all workers employed for construction by the resources sector are NRWs (total construction labour force of 1,031,800 in August 2011; up 20% since August 2005; up 55% in the decade since August 2001): speculate 70,000?
- Surveying, engineering?
- Oil & gas process workers, total for Australia of 11,300 (ABS, August 2011); proportion of NRWs in regional Australia unknown
- Other non-resident process workers; e.g. at locations such as Weipa (bauxite), Kununurra (diamonds); power generation at multiple regional locations...
- Plant and equipment maintenance – usually large numbers (sometimes thousands) of NRWs for scheduled shutdowns to limit production downtime
- Transport: rail, ship (including port operations), road, air (charter flights for FIFOs)
- Work camp NRWs for catering, cleaning, security etc.
- Estimate by mid-2011 at least 150,000 NRWs, most likely closer to 200,000 with future growth projected (refer to New et al., 2011).
- There are currently an estimated 38,340 non-residents workers in Pilbara, WA compared to just 15,930 resident workers (Heuris Partners Ltd, 2010 cited in Carrington et al., 2011).
- Of the 24,765 resource sector workers in Queensland's Bowen Basin region, – a site of significant and growing mining extraction, 14,613 (or 59%) are estimated to be non-residents (OESR, 2011 cited in Carrington et al., 2011)

3.4 The following sections provide some additional background material to our calculations.

#### 4. Queensland's energy-rich regions

4.1 Queensland's Office of Economic and Statistical Research (OESR) has, for the years since 2006, conducted an annual survey of accommodation providers in the Bowen Basin to count NRWs as well as resident so as to estimate full-time equivalent (FTE) populations. This is in recognition of the fact that '[n]on-resident workers are not accounted for in official resident population estimates' (OESR, 2011: v); hence an indication of their numbers is gleaned from this annual survey.

4.2 Of the 24,765 resource sector workers in Queensland's Bowen Basin region – a site of significant and growing mining extraction, 14,613 (or 59%) are estimated to be non-residents (OSER, 2011 cited in Carrington et al., 2011). This effectively boosted the estimated resident population (ERP) of 83,839 by 17.4% to produce a FTE population of 98,452. Because numbers of NRWs can fluctuate markedly, this point-in-time data may not necessarily represent 'average' numbers over any given period. Based on basin-wide (onsite?) workforce for operating coal mines at 30 June 2010 of around 25,000 persons (totalled from maps produced by QDME, 2010), we estimate the NRW proportion for the Bowen Basin at around 59% (Table 4.1).

**Table 4.1 Bowen Basin Non-Resident Workforce estimates 2010**

Row	Type of workers	Effective date	No.	Report source	References
A	Mining operations workforce	30 Jun 2010	24,765	Bowen Basin Coal Mines and Coal Projects	DEEDI, Mines Rockhampton, Aug 2010
B	Resident operations employees and contractors	2009-10	13,178	Minerals & Energy Resources Sector in Qld Economic Impact Study	Rolfe et al., Nov 2010
C	Non-resident operations, employees and contractors	2009-10	11,587	(= Row A – Row B) = 47% of operations workforce is non-resident	accords with information sourced
D	Other non-resident workers (exploration, construction etc.)	30 Jun 2010	3,026	(= Row E – Row C)	
E	Reported non-resident employees and contractors (under-counted – see note below)	30 Jun 2010	14,613	Bowen Basin Population Report, 2010 (59% of Operations and Construction Workforce is non-resident)	OESR, Qld Treasury, Feb 2011

Source: Carrington and McIntosh, Workforce Planning in Mining, Presentation, 12 April 2011.

**Note:** These estimates are conservative as the measurement of mobile transitory populations poses a great many challenges to traditional data collection methods (See Carrington and McIntosh, 12 April 2011). The number of non-resident workers in the Bowen Basin at 30 June 2010 would be double the estimates provided in the table above (Row E) assuming symmetrical rosters because non-resident workers at home on rostered days off may not captured in the count. In addition, point-in-time data is not representative of the average number of workers directly involved in all aspects of resource sector projects (including exploration, construction, operation, maintenance, processing, surveying, transport and catering) in a location for a nominated period.

- 4.3 OESR is to be commended for its attempts to measure NRWs and the proportion they represent in the FTE population of Bowen Basin communities. It is not clear, however, if the methodology accounts for hot bedding or workers off roster. Largely due to accommodation shortages, a practice of 'hot bedding' is common in the region's motels, hotels and caravan parks. This involves shift workers doubling up in a single room, even sharing the same bed, with one sleeping at night and the other sleeping during the day, perhaps never meeting the other person. Nor can the methodology register uncharacteristic vacancies on the survey night where accommodation might have been recently vacated in advance of the imminent arrival of large numbers of maintenance workers for scheduled shutdowns.
- 4.4 There are indications that the resources industry in Queensland is moving towards greater reliance on NRWs for future operations. Queensland Government forecasts point to only modest future population growth in the ERP of the Bowen Basin. For example, in each of the two decades between 2011 to 2031, the ERP has been forecast to increase by only 2.7% and 3.4% in the Central Highlands Regional Council (RC) and 2.4% and 1.9% in Isaac RC (QDIP, 2008a: 26). At the same time, many new and expanded resource sector projects employing thousands of workers have been signalled (McIntosh and Carrington, 2011). The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) most recent (April 2011) listing of advanced resources projects (New et al., 2011) identified a total of 28 new projects for Qld with combined estimated capital costs of \$50 billion
- 4.5 Prior to resource sector activity, many of these regions already had substantial settlement patterns, well-established agricultural and downstream processing industries, and recognized lifestyle amenities. In the Surat Basin and the product-processing port city of Gladstone, major new developments associated with coal seam gas projects are currently under way. The population has been estimated to increase in the Surat Basin from a 2008 ERP base of around 199,000 by 24% or 47,100 (medium series) or 32% or 63,400 (high series) by 2021 (Queensland Department of Employment Economic Development and Innovation, 2010). Most of this growth is expected to occur within the Toowoomba Regional Council (RC) although the government has indicated increases of between 12% and 22% may occur in the area governed by the Western Downs RC. With most anticipated resource development activity external to the Toowoomba RC area, the large majority of resources sector workers will most likely be non-residential.
- 4.6 Other new developments including coal mines, power plants and rail links to coastal ports are planned in Queensland for the important pastoral region of the Central Galilee Basin. The operational workforce for mines in this region (whether the 'onsite' or total number of workers is not clear) has been estimated at 5,250 within five years of July 2010 (QDME, 2010), all of which have been flagged as NRWs. The total number of NRWs could be expected to be substantially higher during construction stages. It appears that Queensland anticipates having many tens of thousands of additional NRWs in the resources sector in the coming decade.
- 4.7 Perhaps in anticipation of this, the Queensland Resources Council (QRC) commissioned the production of the *Minerals and Energy Resources Sector in Queensland Economic Impact Study* (Rolfe et al., November 2010). Among other matters, the study totalled the number of salaried and wages employees and contractors in regional and metropolitan areas of Queensland reported by member companies as the result of their activities. The analysis referenced postcodes to consolidate data to the Statistical Division (SD) and Local



- Government Area (LGA) levels and summarised results according to employees' nominated postcodes of residence. The study modeled and presented predictions for SDs.
- 4.8 We have concerns with this level of consolidation as this disguises the movement of NRWs within SDs. In other words, this blunt approach does not recognise the geographic reality of resource sector activities particularly in those northern SDs with an eastern coastline. Specifically many thousands of mine workers live in coastal cities, towns and localities (such as Gladstone, Rockhampton, Yeppoon, Mackay or the Whitsunday islands as well as many smaller locations) but travel considerable distances, sometimes hundreds of kilometers within the same SD, to their workplaces in the mines of the Bowen Basin. The methodology does not identify this mix and hence under-estimates the number of non-resident workers in the industry in Qld.
- 4.9 Appendix Two of this QRC report does, however, list numbers of 'residing' mining and resource employees by LGA. Although we have reservations about some aspects of the methodology including the correct recording or reporting of postcodes, a rule-of-thumb assessment of results in this table (based solely on the likelihood of mining operations to occur within certain LGAs) suggests around 50% of the 38,029 recorded employees were NRWs. QRC would most likely have access to data which would permit identification of numbers of NRWs from this survey of members because they would have recorded employee 'work' as well as 'home' locations. However, such data would by now most likely be too dated to be of great worth. This is because data disclosed by member companies of the QRC for the 2009-10 year would not include massive increases in workforce numbers during the intervening period and thus would not be representative of the reality of current or projected employment numbers. Specifically, latest ABS labour force statistics for May 2011 (Cat No. 6291.9.055.003) showed that the number of workers employed by the mining industry in Queensland rose from 39,300 in February 2010 to 66,800 by August 2011; that is, by 27,500 or a staggering 70%.
- 4.10 Although the number of workers reported by QRC-member companies (38,092) is similar to the Queensland total for ANZSIC-coded mining employees as at February 2010, these two totals have not referenced the same worker cohort although overlap could be expected. This is because the member companies supplying data for the QRC project were resource developers. The large numbers of mostly contract workers recruited by leading providers of professional, construction, operational and maintenance services (for example, Worley Parsons, Leighton Holdings) to mining and energy companies and third party contractors would not be captured.
- 4.11 It is also worth noting that the methodology employed to produce the QRC-commissioned report did not identify NRWs who did not 'reside' in Queensland travelling alternatively from other states or territories (possibly New South Wales more so than others) or overseas (for example, from New Zealand) to work in that state.
- 4.12 The size of the non-resident workforce in the Bowen Basin is obfuscated by conflicting data. Our analysis of unpublished ABS data from the 2006 Census showed that, at that time, only 71.5% (9,085) of the 12,708 ANZSIC-classified mining industry workers whose workplace was in the Bowen Basin indicated that their place of usual residence was within that region. Of the remainder, the place of usual residence of 64.9% (2,351) was in coastal cities, towns and localities of the same SDs; 31.5% (1,141) were from other locations throughout Qld; and the remaining 3.6% (131) were from elsewhere in Australia. Much has

changed with respect to levels of resource sector activity in the Bowen Basin since August 2006 as indicated by ABS labour force statistics for the mining industry previously referenced and the OESR (2011) survey which counted 14,613 NRWs in the sector on 30 June 2010. Our calculations indicate this figure represents 59% of the Bowen Basin Workforce meaning that as few as 41% now live locally and the remainder are NRW, if NRWs involved in construction and exploration are also included (see Table 4.1). These data contradict claims made by Michale Roache Chief Executive Officer of the QRC that: 'In the Bowen Basin right now, 85% of the workforce lives locally, 15% either drive-in, drive-out or fly-in, fly out' (ABC, 16 March 2011).

## 5. Pilbara Region of Western Australia

- 5.1 Although there are major differences between characteristics of mining- and energy-intensive regions of the eastern states and WA, there are also some parallels. As mentioned above, the NRW component of a host community's FTE population (resident population plus NRWs in the work cycle of their roster) does not equate with the number of persons employed as NRWs for that location. This is an important distinction. If, for instance, 12-hour shifts and symmetrical block rosters applied at all work sites, the total number of NRWs would be double the 'on-site' non-resident workforce because one half would be on rostered days off and thus would have travelled away. Alternatively, an asymmetrical roster of two weeks on followed by one week off would imply that the total number of NRWs required for continuous operations at that site would be 1.5 times the NRW component of the estimated FTE population.
- 5.2 We emphasise that care needs to be taken with the interpretation of NRW numbers indicated in some industry and government reports. For example, Pilbara Industry's Community Council (PICC) report *Planning for Resources Growth in the Pilbara: Revised Employment & Population Projections to 2020* (Heuris Partners Ltd, 2010) revealed in their projections only the 'population element' of NRWs (see Box 5.1). While the impact on the FTE population might be of most interest to the Pilbara region and its communities, it disguises the total number of NRWs and hence the number of individuals, families and source communities affected by these workforce practices. In fact, a likely scenario for 2010 if rosters of two weeks on followed by one week off applied across all operations was for the estimated number of NRWs to be 57,510, not the 38,340 published in the report as the population element.

### BOX 5.1

#### Total resource-related workers in the Pilbara population

(after Heuris Partners Ltd, 2010)

	2010	2015	2020
Operational NRWs on work cycle	15,464	27,524	33,685
Construction NRWs on work cycle	22,876	9,538	2,055
Total NRWs population element*	38,340	37,062	35,740
Resident workers	15,930	20,326	20,967
Total workers <u>in</u> population	54,270	57,388	56,707

\* Excludes workers in leave cycle of roster. For 2010:

If roster of 2 weeks on, 1 week off, then additional number of NRWs = 19, 170; total number of NRWs = 57,510

If symmetrical rosters, then additional number of NRWs = 38,340; total number of NRWs = 76,680

5.3 Notably the number of NRW in operational roles is expected to double during the same decade, from 15,464 or 17% of the Pilbara's population element in 2010 to 33,685 (34%) by 2020 thus representing at least one in three persons in the FTE population by that time.

5.4 A more comprehensive picture for the Pilbara region of WA indicated that NRW in the Pilbara would decline slightly over the decade to 2020 (from 38,340 or 43% of the FTE population in 2010 to 35,740 or 36%) (Heuris Partners Ltd, 2010); refer to Box 5.1. The decline of NRW in the population represents substantial reductions in construction workforces (from 22,876 in 2010 to just over 2,055 by 2020) as projects at advanced stages of planning come into operation. However, the report warns that these declining numbers:

... are likely to be conservative because a number of companies have only chosen to include expansion/new projects at an advanced planning or approvals stage. Nearly all of these workers can be expected to be FIFO [NRWs] but, depending on their location, they may also create a range of pressures on infrastructure and services. (Heuris Partners Ltd 2010: 9)

5.5 In fact, since the PICC report was produced in 2010, at least 39 new resources projects at advanced stages of development and with estimated capital costs of \$109.5 billion have been listed (New et al., 2011). In April 2010, Lampard et al. (for ABARE) reported on 29 projects with estimated capital costs of \$86.4 billion at advanced levels; some of these may have been completed in the intervening months to April 2011 and hence would not be duplicated in the latest listing.

## 6. National Resource Sector Employment Taskforce (NRSET) numbers

6.1 Importantly, the influential NRSET report *Resourcing the Future* (2010) uses, among other reports, data published in the PICC (2010) report referenced above (Heuris Partners et al., 2010) when quantifying labour needs for its estimations of future job vacancies. This means that the future labour force demands of the resources sector in the immediate future are, potentially, significantly understated (See Box 6.1).

### BOX 6.1

#### The National Resources Sector Employment Taskforce Report (2010) shows:

Forecast demand for 65,000 new jobs in mining and gas by 2015, on new resource extraction projects; plus  
45,000 in construction (nearly all expected to be employed as non-resident, FIFO, DIDO arrangements)

*'Resources sector could be 36,000 tradespeople short by 2015.'*

These figures are most likely under-stated because (for example);

NRSET Technical Paper Figure 6 uses *The Pit Crew Report WA 2009* to show:

*'Total construction labour demand in WA' by late 2012 would be 22,500'*

However, Pit Crew Report shows *'need for onsite construction labour... 22,500 in late 2012'* (that is, workers in the leave cycles of their rosters were not included).

Construction workers are generally NRWs

Furthermore, the NRSET Technical Paper referenced Heuris Partners Ltd (2010):

*'... the workforce required in the Pilbara for resources construction will be 22,000 in 2010 rising to 28,000 in 2012'*

Note that Heuris Partners (2010) presents the 'population element' only in the Pilbara, excluding those NRWs who were on rostered leave.

Because the NRSET Report (2010) uses 22,000 in its estimations, the number of construction workers required in the Pilbara is understated by a number determined by work rosters (e.g. if 2 weeks on, one off, then under-counting = 50% or 11,000 workers for 2010; 14,000 by 2012).

- 6.2 An additional issue is the workforce turnover rate for NRWs which is apparently substantial and greater than for those recruited locally (Beach and Cliff, 2003; Beach et al., 2003; BHP Billiton, 2009b). This means that a different cohort of individuals, mostly men, become NRW initiates each year as others withdraw. The ABS does not collect data with respect to the size, fluctuations, or source and destination of NRWs, or the length of time individuals and family members remain embedded in this lifestyle.

## **7. Growth in use of contractors**

- 7.1 There has been an increasing reliance by the resources sector on principal contracting companies and third-party contractors for all facets of project development, operations, and other directly related services especially since changes to workplace practice legislation in the late 1990s. Indeed, most sectors within the industry have followed the lead set by the gold mining companies in the 1980s to favour contract labour. Accordingly, use of contractors has risen substantially over the past two decades, reportedly driven by searches for efficiency (Rolfe et al., 2007). Others see it differently. Preferences for contracting out exploration, construction, operational and maintenance to service providers are thought to facilitate specialisation by organisations and avoidance of industrial disputation with unions (Allonby, 1998). Besides, use of short-term contractors allows more flexibility in determining worker numbers and workplace agreements. Contractors are usually NRWs. Employing large numbers of contractors and non-resident workers over local unionized mining and construction workers is a divisive strategy that has the potential to undermine social solidarity, community identity and breed widespread community discontent. This has happened in Moranbah over the controversial BMA Caval Ridge Project which applied for state government approval to import 100% of its workforce as non-residential.
- 7.2 For most resource-rich regions of Australia, minimal information on the extent and use of contractors and the type of work they undertake is published. Some data are available, however, for Western Australia where, in 2008–09, contractors comprised 56% (around 40,000) of mining personnel; they have represented the majority of this sector's workforce for the past decade (DMPWA, 2009). Although WA appears to have been the lead state with these workplace arrangements, other jurisdictions have adopted these practices although to what extent is not clear. Some resource development companies report number of contractors working on their projects as well as number of direct employees; others choose not to do so. The use of principal contractors and third-party contractors increases the difficulty of sourcing numbers on workers. Furthermore, some contractors do not have an Australian base.

## 8. Concluding comment on TOR 1

- 8.1 The actual and projected rapid growth of reliance on NRWs in the resources sector carries significant impacts for individual workers and their families (as set out under TOR2) and host communities (as set out under TOR 3). It is troubling therefore that dramatic socio-demographic processes have been unleashed without concerted attempts at national government level or by the industry sector to accurately measure and account for the numbers of non-resident workers involved. We commend the Qld Government's attempts to measure NRW while recognising the limitations of these measures.

## 9. Terms of Reference 2

### Costs and benefits for companies, and individuals, choosing a FIFO/DIDO workforce as an alternative to a resident workforce

- 9.1 Responses to increasing industry demands for labour, initially in remote locations but subsequently in more settled areas, have fueled recruitment of NRWs. These practices have substantially elevated the likelihood of a range of adverse impacts on communities most directly affected by resource development relevant to this TOR. This aspect of resource development is particularly worrying given that 94 minerals and energy projects at advanced stages of development and with total capital expenditure of around \$173.5 billion were conservatively identified in the most recent listing of major minerals and energy projects (New, et al., 2011). These projects are either committed or under construction, cover a wide range of energy, mineral mining, and mineral processing projects and will be reliant on non-resident workforces.
- 9.2 There is a striking absence of independent research on the costs and benefits of non-resident workforces as an alternative to a resident workforce. While the lifestyle associated with non-resident workforce practices no doubt suits some and is character-building for others, layers of risk and adversity are experienced by other non-resident individuals and their families. These include stress levels, lifestyle and health issues including fatigue (known as FIFO fatigue); gender relationships and inequalities; parenting problems; domestic and family violence; family break-ups; social effects for remote Indigenous communities; and psychosocial well-being of family members (Carrington and Pereira, 2011a, 2011b; Gallegos, 2005; Gier and Mercier, 2006; Guerin and Guerin, 2009; Haslam McKenzie et al., 2008; Kaczmarek and Sibbel, 2008; Lord, 2008; Taylor and Simmonds, 2009; Watts, 2004.).
- 9.3 **Divorce, separation and the single state:** Statistics for the mining industry in Australia (as classified by the ANZSIC) excludes other workers directly employed by the resources sector. At the time of the 2006 Census, 11.2% of workers in this industry were divorced or separated (similar to the 11.3% rate for all other industries combined); and 32.3% of mining industry workers had never married (35.6% for all other industries). Miners who worked in the Bowen Basin at the time of the 2006 Census had a lower divorce/separation rate (10.0%) than for the industry as a whole (11.2%) and also lower than for other industry workers in that region (10.9%). Furthermore, in 2006, they were less likely to have never married (29.1%) than other workers in their industry Australia-wide (32.3%) or in the Bowen Basin region (33.5% for all other industries combined). For Qld as a whole, 11.0% of miners living

in that State were divorced or separated (12.2% for all other industries); and 31.8% of mining industry employees had never married (36.2% for all other industries). (This analysis is based on customized data purchased from the ABS).

- 9.4 The Pilbara Region of WA presented as less stable than the Bowen Basin and the mining industry as a whole. Of those identified as working in the Pilbara and employed specifically in that industry, 12.3% were divorced or separated compared with 11.2% for the Australian industry and 12.2% for all other industries in that region. With regard to registered marriage, 36.9% had never married (38.3% for all other industries in the Pilbara) which was a substantially higher rate than for the industry as a whole (32.3%). The divorce/separation rate for all workers in the mining industry who lived in WA (11.5%) was similar to the state-wide rate of 11.6% for all other industries. (This analysis is based on customized data purchased from the ABS).
- 9.5 However this data do not distinguish between resident and non-resident mining workforces. Additionally looking at divorce and separation statistics from the census ignores relationship breakdowns between couples in de facto or other 'social' relationships (i.e. not registered marriage) and overlooks the fact that many non-resident workers are single in any case, although how many no-one knows. In other words, this data is not a useful measure of the impact of non-resident workforce arrangements on family relationships. If anything it indicates that mining families that live and reside in the same geographic location are relatively stable compared to other families.
- 9.6 Major research studies have consistently shown that children and individuals in stable family relationships have better health, social and cognitive outcomes on most indicators of health and wellbeing (See Henry 2006 for an overview of this body of research, also AIHW, 2011). While a positive family environment is beneficial to individuals it also carries society wide benefits in reducing health and welfare expenditures. The non-resident worker lifestyle of spending large blocks of time separated from supportive family can have significantly adverse consequences for non-resident workers and their families.
- 9.7 **Migration of mining workers (compared with all other workers by place of usual residence).** Those who worked in the mining industry were more likely to have relocated in the year prior to the 2006 Census (25.2% had done so) than those working in all other industries in Australia (where only 18.5% had done so). Where place of usual residence was the Bowen Basin or Pilbara Regions, even higher rates of movement (29.3% and 27.1%, respectively) applied to mining workers living in those regions than the industry norm. These higher rates of relocation for workers in the mining industry also applied with respect to usual address five years prior to the 2006 Census with 57.9% having changed their address compared with 47.2% for those employed in all other industries. Workers in the mining industry who indicated that they lived in the Bowen Basin and Pilbara were again more likely to have changed their address in the five-year period (58.6% and 69.3%, respectively, had done so) than mining industry workers residing in other locations. Note that these movements applied to workers identified with reference to place of usual residence in the 2006 Census. (This analysis is based on customized data purchased from the ABS).

- 9.8 Concerns have been raised by Annette Hennesey, Qld State Coroner, about fatigue related accidents and mortalities due to non-resident workforce arrangements in the Qld mining industry (Queensland Courts, Officer of State Coroner, 2011). Under current conditions, fatigued non-resident workers are more likely to be killed or injured in motor vehicle accidents as they commute either end of work cycles than in the workplace. These are harms for which companies are unlikely to acknowledge any responsibility, especially as the workers may not even be employees, but they are predictable impacts of the intensified labour process, for which there is already some worrying evidence (Murray and Peetz, 2010: 36, 192-193, 218-221; Queensland Courts, Office of the State Coroner, 2011).
- 9.9 The average hours worked in the mining industry has increased substantially over the last 25 years (see Figure 9.1 below). The industry increasingly relies on more hours worked per week (average 45 hours as at August 2011, yet 1 in 3 worked over 60 hours per week). For NRW the opportunity cost of longer rosters and shifts is less time with family, cultural and community activities.
- 9.10 Other far reaching social problems can be generated in some cases because of a sudden rise in the disposable income of non-resident workers, such as higher rates of alcohol abuse and drug addiction, removed from the civilising influences of family and friends (Doukas et al., 2008; Mayes, 2008). One of the risks is the exposure to high rates of alcohol consumption and associated health and other risks associated with camp life.

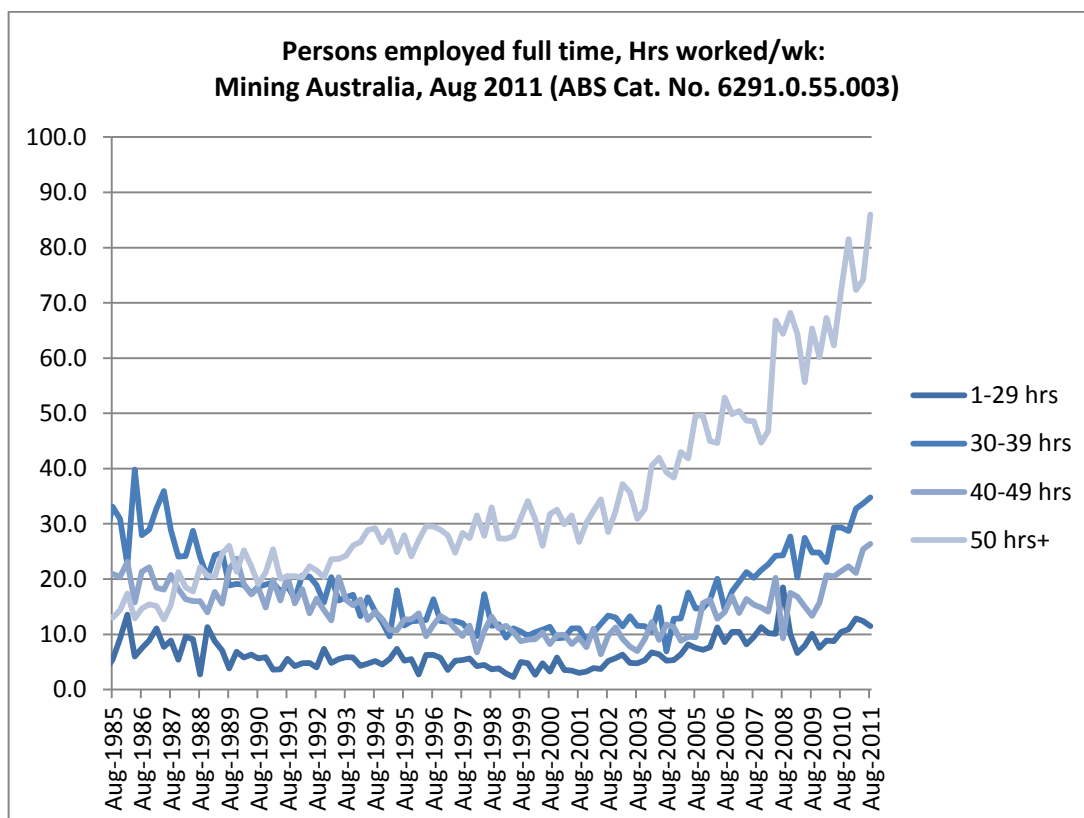


Figure 9.1: Hours worked by persons employed in mining, Australia, to August 2011 (Source: ABS Cat. No. 6209.0.55.003)

## 10 Risks of Camp Life

- 10.1 Our ARC Discovery project addressing aspects of masculinities and violence in rural Australia, did not set out with the intent of investigating activities of the resources sector. However, analysis of secondary data for injury, harm, violent related mortalities, injuries and morbidity, influenced our choice of research locations. This is how we serendipitously came to conduct extensive field research in mining communities in WA and Qld, undergoing rapid socio-demographic redefinition due to the growth in non-resident workforces. This is also how we chanced upon the risks associated with camp life.
- 10.2 No longer are camps only used to house NRW for remote mining operations. Increasingly many more non-resident workers are living in single-persons quarters located adjacent to or not far from established mining communities. Camps are typically constructed out of demountable dwellings or 'dongas' uniformly arranged in compounds with a common mess, (dry mess and a wet mess) laundry and entertainment facilities. They vary greatly in conditions as there is a paucity of planning regulations relating to temporary dwellings for the purposes of prospecting in particular. Some provide air-conditioned quarters, restaurant quality food and offer superior recreational facilities while others are hastily and sometimes illegally erected structures, surrounded by barbed wire where the only recreational outlet on offer is the 'wet mess' (Carrington et al., 2010).



**Figure 10.1 Examples of Work Camp Architecture**

- 10.3 The Rosewood Camp outside Blackwater, Qld which had never had building, planning or plumbing approval and houses 500 NRW is a case in point. The Central Highlands Regional Council cancelled the illegally erected camp's lease, however the Qld state government overruled the council decision extending the camp operators lease for an additional year (*Shiftminer*, 'Unhappy Campers', 10 April 2011: 1). Previously Mr Vaughan Johnston (LNP) Qld MP had this say about the Blackwater camps in Qld Parliament:

Whoever dreamt up the idea of fly in, fly out needs flogging with a hobble chain because all they are doing is decimating these communities and scourging these communities because those workers go into those towns for 10 or 12 days and are gone again when their time is up. There is no contribution at all to those communities. In that regard I refer to the town of Blackwater, ...Blackwater has fly in, fly out workers, but it is not so much fly in, fly out anymore



because the airport has closed. BMA no longer wants to maintain that airport and therefore there are no domestic air services coming into Blackwater unfortunately. Blackwater is a town of 8,000 people, 6,000 of whom reside there and the other 2,000 drive in and drive out. As the minister knows, those mining camps are absolutely deplorable...This government has to grow some balls as far as I am concerned in relation to making certain that we look after those communities and encourage people to come and live in those communities and reside in those communities, educate their kids in those communities and be a part of that community. (Vaughan, 8 March 2011, Queensland Parliament, Hansard)

Another member of the QLD Parliament, Jo-Ann Miller, (ALP) remarked 'I would like to agree with the member for Gregory, Vaughan Johnson, in relation to this' (Miller, 8 March 2011 Queensland Parliament).

When I was in Collinsville last year I saw firsthand those disgusting, disgraceful camps on the outskirts of Collinsville and I think they should be banned. These fly-in fly-out camps do not contribute in any shape, manner or form to the communities. The workers fly in, they go out to these camps, which are often on the distant outskirts of the particular towns, and they make no contribution to the community. ... In my view, it is not good enough that they have these disgraceful camps. Some of them that I have seen are not even hooked up to sewerage systems. They have sewage running freely over land. To see it is just absolutely unbelievable. I do know that a couple of the companies are looking at providing decent mining type camps on their mining leases, but I cannot see how it is good to have miners living in dongas cooped up like chooks in a pen. (Miller, 8 March 2011 Queensland Parliament, Hansard).

10.4 Increasingly camps are becoming privatised enclaves patrolled by private security officers. In some cases the camp managers also operate the 'wet mess' liquor licence so central to camp life. Where this is the case there are considerable risks in subcontracting the responsibility of the health and wellbeing of workers, many of whom are young single men, to the care of camp managers who also profit from plying them with alcohol. Where confidentiality clauses inserted into individual work contracts also prohibit the exposure of these conflicts of interest and other corporate harms in the public interest, these practices remain largely hidden from public scrutiny, exposing NRW (including security, hospitality and other NRWs) to unacceptably high levels of risk of victimisation of alcohol fuelled disturbances and assaults. The privatised policing of the camps also considerably enhances the prospect that few if any corporate harms, disturbances or assaults would be reported to the police, other external agencies or public registers.

10.5 In 2007 Francis Logan the then Western Australian Resources Minister 'called on mining companies to clean up their act' after revealing in a Ministerial Media Statement that 82% of exploration sites inspected in that state, involving 33 different companies, were found to have breached mining regulations (Logan, 13 November 2007). The Minister stated: 'Hancock Prospecting had been fined \$20,000 for the unauthorised construction of a 59-person exploration camp at Roy Hill, 120km north of Newman' (Logan, 13 November 2007). Apparently such fines are not disincentives as this was its second fine in two years for similar violations. Expressing disappointment at the 'blatant disregard of regulations and tenement conditions', the Resources Minister said:

Mining companies are constantly calling on the State Government to speed-up the exploration approvals process and yet, when approvals are granted, some companies are showing a

complete disregard for the environment and blatantly disregarding the exploration conditions. (Logan, 13 November 2007).

There remains minimal public information about corporate breaches of this kind. The penalties - ranging from \$10,000 to \$100,000 – would in any case amount to a trifling tax on illegal activities for companies that count their profits in anything from the tens of millions to the billions (see Carrington et al., 2011).

- 10.6 There have been considerable efforts to attract women into non-traditional occupations, mining being one of these. However there is some evidence that the preference for a non-resident workforce in the mining sector is reversing the hard won gains of women entering this traditionally masculine industry. The percentage of females employed in the mining industry has decreased from 15.7% in November 2010 to 12.6% in August 2011 (Figure 10.1). It is not hard to see why. Spending large slabs of time away from home as a non-residential worker is not especially conducive to family life and especially the nurturing of children.

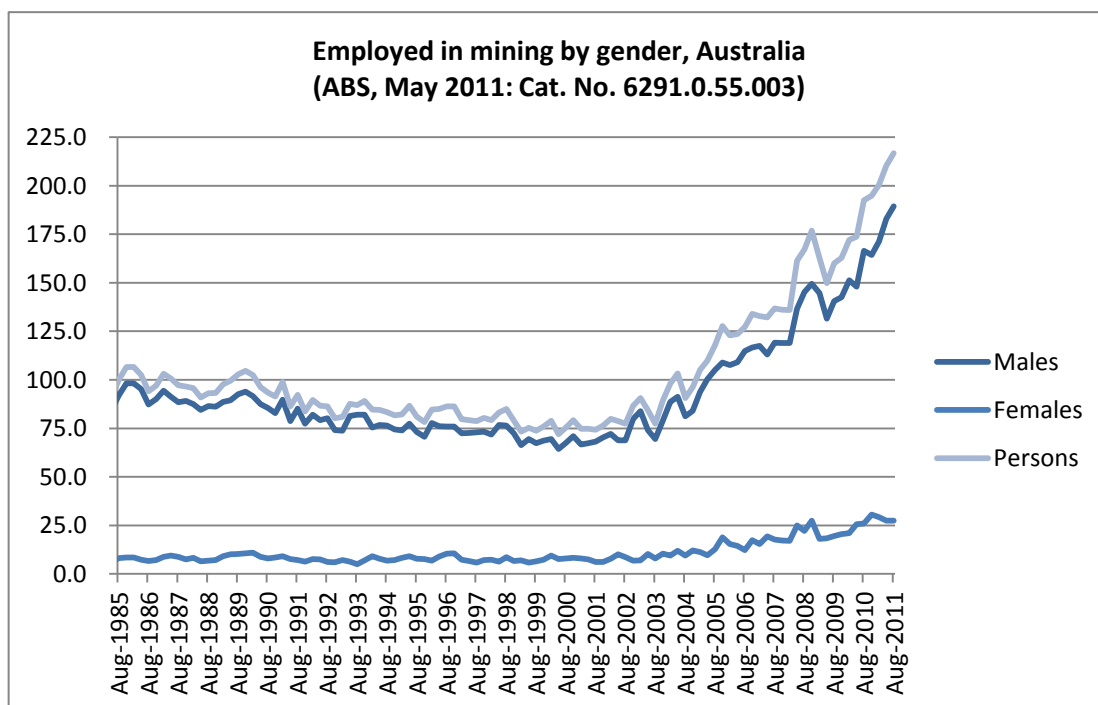


Figure 10.2: Employment in Australia’s mining industry by gender, May 2011  
 Source: ABS, Mining Australia to Aug 11, Cat No. 6209.0.55.003

11. **Impacts on non-resident workers and their families.** There has been very little research into the specific short or long term impacts of non-residential organizational work practices on non-resident workers and their families. Some evidence is emerging that resident work patterns can adversely impact on worker health and well-being, occupational health and safety, fatigue related injuries and car accidents, family and community safety. However this is a critical research gap and a major issue for mining communities, mining industry, workers and their families. Carrington and Pereira’s (2011) survey included two open-ended questions, asking respondents to offer additional comments about the impact of non-resident mining workforces on their community. A total of 319 of the 338 respondents made

additional comments. The impact on non-resident workers and their families was a common theme. The box below (Box 11.1) quotes in full from that study.

#### **BOX 11.1**

##### **“Impact on non-resident workers and their families**

While outside the scope of this survey, the impact of non-resident work arrangements on non-resident workers and their families emerged as a key issue, as did expectations about the role of government in mitigating adverse social impacts of mining industry practices on non-resident workers and their families. There is a paucity of planning regulations or creative design options evident in the erection of work camps leading to complaint of the kind expressed by this non-resident worker. *‘As a non-resident working in a mining town I can see why local residents and council are not totally happy with us. But cannot see myself living in these towns while billion dollar companies like X continue to provide sub-standard housing for their workers. I try to support local business through buying consumables and local community groups through donations with the unions...’*

Non-resident workers are seen to benefit under post-industrial mining regimes. But do they? The qualitative responses of twenty-two non-resident workers to this survey provide some insight into this issue. There are handsome economic rewards for workers but based on the reflections of these non-resident workers one could hardly devise a work regime more hostile to sustainable family and community life, as this survey respondent explained. *‘I am a non-resident worker by choice. My family prefers to live in a coastal community. During my time at work and away from my family, I do not drink, I am offered excellent healthy food in the accommodation facility, I am given access to and use fitness equipment - in short, being a non-resident worker is fantastic for my and my family’s health and well-being.’*

The majority of the non-resident workers who answered the survey said that they were given little choice about becoming non-resident workers, only two commented that it suited them, while others said they were unable to bring their family due to lack of housing and rental availability and affordability. According to this respondent *‘Moranbah is a fantastic place to live. Unfortunately a majority of the workers have been forced to stay in camps as it is too expensive to bring their family to this location as cost of living is expensive, and accommodation is very hard to come by.’*

Non-residents workers who responded to the survey appeared to be sensitive to their impact on communities and acknowledged how difficult it was for them to have a meaningful participation in communal life, either where they live or where they work. They are placed in an invidious position, as described by the following non-resident workers, as this non-resident worker explained. *‘...It is extremely difficult for non-resident workers to contribute to the community they live and impossible to contribute to the community they work in - I know because I am one.’* Another non-resident worker gave a different example. *‘I have had to give up positions on P&C’s and Aged Care committees because of the difficulty of working away from home...’*

The routine separation from family, support and informal social controls and sense of belonging to a community can have seriously negative impacts on the wellbeing of non-resident workers and their families, such as family breakdown, alcohol and substance abuse, and at the extreme

end suicide, violence, and fatigue related deaths and injuries (AIHW, 2010). This quote from the wife of a non-resident worker graphically illustrates the adverse impact on her family life.

*'My partner works in the mining industry and stays out at camp during his working week. He has problems with drinking, drug use and money management. He drinks until he is drunk most nights out at camp and comes home and wants to do the same on the weekends. I find that him being out at camp for longer than he is home is very detrimental for his health and also for our relationship. ... This is not an isolated relationship - most of the women I meet and speak to about how they cope with their partner being away in the mines have developed a kind of coping mechanism where they have allowed their partner to do as he wishes because he will be leaving to go back to work anyway.'*

A social worker from a Queensland mining community drew attention to the risk of family breakdown and dysfunction associated with non-residential work patterns, when she wrote: *'As a social worker I have great concerns about the impact on the family whose partner comes to live and work in X and live in camps for their rostered days. I have been involved in a number of interventions where this significantly affected family functioning and led to breakdown in family relationships.'* A counsellor from one of the Bowen Basin communities responded with passion and a plea to address the adverse impacts on non-resident workers and their families.

*'As a counsellor in a mining community, I am very much aware of the limited relational development available to workers living in barrack accommodation. With one member of the family away for large periods of time, relationships suffer and are stretched to breaking point. If employers persist in this form of worker supply, then they must spend an increased amount ensuring the health and strength of relationships and encouraging families devoid of a parent for days at a time. Mining communities are not the only victims in this circumstance. Families and relationships suffer as well. Perhaps your University would like to open this up for study as well?'*

Source: Extract from Carrington & Pereira, (2011b, forthcoming) 'The Social Impact of Resource Development on Rural Communities', *Rural Society*

## 12 Costs and Benefits as Identified by BHP for the Olympic Dam Expansion

- 12.1 The following has been extracted from BHP Billiton's Olympic Dam Expansion Draft EIS Appendix Q7 (2009a: 146). While we do not promote this as exhaustive, in our opinion, this stands out among EISs and SIAs as an even-handed representation by a major resource development company of the costs and benefits of using non-resident workforces.

### BOX 12.1

#### Extract from BHP Billiton's Olympic Dam Expansion Draft EIS (2009a)

##### *Costs and benefits for individual employees and their families*

##### Advantages

- Offers greater flexibility for employees and their families to decide where they want to live

- May be preferred by families who wish to live in a metropolitan area, rather than in a rural or remote area
- Greater choice of education and health facilities in larger metropolitan centres
- Less disruption to existing social networks/greater access to family and friends, and other social supports and services
- Greater work opportunities for partners of mine workers in larger metropolitan centres/enables existing employment to be continued
- Employees can spend extended periods of time with family and friends and/or pursue other activities and interests during rostered time-off
- Better work-life balance for some employees and their families
- May offer financial and logistical advantages

#### Disadvantages

- Socially isolated from existing social networks, including family and friends
- Less opportunity to participate in local community or sporting activities or form local friendships
- Less interaction with partner and children on a daily basis, more limiting parenting role and influence on child-rearing
- May impact on social and personal relationships, increase work-home tensions and lead to relationship breakdowns and divorce
- Confined living conditions/limited personal space and private in LDC accommodation
- May impact on personal wellbeing as a result of asymmetric work schedules and psycho-social stresses associated with LDC living conditions
- Lack of balance between work, health and relaxation/more difficult to manage interface between work and non-work life
- Increased travel/time spent travelling/risk of accidents and injuries associated with drive-in drive-out commuting

#### ***Costs and benefits for companies***

##### Advantages

- May help alleviate labour and skills shortages by offering greater flexibility to potential employees
- Lower capital costs/is more cost effective for operations in the short term or for the short term projects
- May overcome land or accommodation shortages and high housing costs
- May be critical to the viability of projects, particularly in the initial stages
- Useful for projects where workforce numbers vary over time, or where a large workforce is required for a defined period (e.g. during construction or expansion)
- Lower rates of absenteeism than among residential employees

##### Disadvantages

- Employee turnover tends to be higher
- Employees are not available for call-outs or overtime
- Limits opportunity for part-time work
- Can disrupt professional communication and workforce relations

- 12.2 An additional dimension which warrants consideration is cost and benefits for governments. The following has been extracted from the same Draft EIS (BHP Billiton, 2009) and has been reproduced in full within this TOR bearing in mind that it also claims to identify considerations for communities (see TOR 3) as well as governments.

### **BOX 12.2**

#### **Extract from BHP Billiton's Olympic Dam Expansion Draft EIS (2009a)**

##### ***Costs and benefits for governments and communities***

###### **Advantages**

- Enables mining in areas that would otherwise be uneconomic
- Lowers costs to government and others in developing town services to rural and remote communities
- Can stimulate investment in regional services e.g. airlines
- Limits funding support required from government and other service providers to meet the needs associated with an expanded residential population
- Limits administrative costs of managing an expanded town
- Reduces costs (financial and social) to government, business and service providers associated with mine closure

###### **Disadvantages**

- Less opportunity for employees to contribute to local community and voluntary activities
- More transient community, impacting on community identity and cohesion
- Impact on regional economics with less spent locally
- Increased risk of motor vehicle accidents and injury associated with drive-in drive-out commuting
- Greater likelihood of criticism by state and local government, residents and business
- Can impact on the provision of community services as a result of reduced economies of scale
- Less rate revenue for local government, potentially impacting on its ability to provide services and cost equity
- Gender imbalance can lead to social problems
- Potential tensions between residential and LDC workforce as a result of perceived inequities in conditions and benefits

### 13 Terms of Reference 3

#### The effect of a non-resident FIFO/DIDO workforce on established communities, including community wellbeing, services and infrastructure

- 13.1 Research into the social and human capital impacts of non-resident employment and accommodation practices on local communities and townships within close proximity to mining projects has received limited, albeit increasing, attention in Australia (Haslam McKenzie et al., 2008; Lockie et al., 2009; Petkova et al., 2007b; Carrington et al., 2010; Cheshire, 2010; Murray and Peetz, 2010; Carrington and Pereira 2011a, 2011b) and elsewhere, including the United Kingdom and the Canada (Doukas et al., 2008). According to this small body of research, the social impacts of mining developments reliant on non-resident workforces are most strongly apparent, and experienced at the local level. The increasing reliance on non-resident workforces has resulted in an ever-decreasing permanent resident workforce undermining sustainable community development based on economic diversification (Gallegos, 2005).
- 13.2 A study of the economic impact of non-resident workforce mining projects in Moranbah, Queensland, estimated that 4,000 non-resident workers would spend around \$15.5 million per year (Rolfe, et al., 2007). However this figure would be substantially higher if their families also lived in the community. The key expenditure leakages identified by this study arose from the replacement of families with single men decreasing family shopping expenditure (Rolfe, et al 2007, p. 24). 'Fly-over' effects such as these threaten the continuing sustainability of some towns (Storey, 2001), fostering tensions between non-resident workers and residents who see themselves as having a long-term commitment to the community but disproportionately bearing the burdens (Carrington and Hogg, 2011).
- 13.3 In addition to the sheer number of transient workers with no meaningful commitment to place, this organizational work practice has had hugely disruptive effects on families and communities. The effective local population may massively increase overnight as a predominantly male, itinerant labour force moves in (Lozeva and Martinova, 2008; Murray and Peetz, 2010). Such unprecedented population increases place a considerable burden on local services and have resulted in soaring housing costs and other local costs of living (Haslam Mckenzie, et al 2008).
- 13.6 Recent research indicates that some of the social costs of non-resident workforce practices relate to new patterns of crime and violence. The housing of thousands of men in work camps with little else to do off roster than consume alcohol, can impact on levels of male-on-male alcohol fuelled violence (Carrington et al., 2010, 2011). Much of this low level intra-male violence is unreported as participants in brawling risk losing their jobs if such altercations register officially (Carrington et al., 2010). In any case the camps are mostly policed by private security guards heightening the prospect that any disturbances will remain hidden from public view. While most of this violence is immeasurable, some 'hotspots' for violence have nevertheless been recorded for mining towns at the forefront of the boom. In one Western Australian mining community the rate of violence was 2.3 times the state average and had risen almost threefold since the beginning of the resources boom (Carrington et al., 2010: 11). In a Queensland mining community at the forefront of the boom, the rate of offences against the person had grown from 534 per 100,000 in 2001 to

2,315 per 100,000 in 2003 – a rate more than twice the state average (Carrington, et al., 2011). These crime rate increases impact substantially on rural and remote communities and clearly have implications for local policing.

- 13.4 Longitudinal research in Fort McMurray, an oil boom town in Canada, found that from 1986 to 2009 crime exceeded the national average by three times (Ruddell, 2011, p. 8) yet the number of police officers lagged behind national averages for two decades (Ruddell, 2011, p. 9). In addition to the anticipated increase in police workload, police services in rural locations face additional challenges associated with regional policing (Barclay et al., 2007), such as the responsibility for policing extensive geographical boundaries, lack of economy of scale, heightened competition for tax generated funding with other human service providers and increased rates of police turnover due to higher costs of living and the lure of higher salaries paid by the mining industry.
- 13.5 Crimes against the person are the least reported of all crimes to the police. We urge caution in the interpretation of recorded crime data as our field research in WA, NSW and Qld communities (143 interviews with key stakeholders) gathered triangulated qualitative evidence of widespread under-reporting, especially for alcohol related male on male assaults between non-resident workers and between NRW and locals. The reasons include:
- Participants in brawling risk losing their jobs/contracts if altercations register officially
  - Medical treatment for injuries provided on-site by contracted medical staff or by volunteer organisations such as St John Ambulance
  - Camps are mainly patrolled by private security guards heightening the prospect that any disturbances will remain hidden from public registers, criminal records and public view
  - Publicans/ canteen ‘wet mess’ operators risk losing their liquor licenses if disturbances registered with the police or other authorities
  - Police reluctant to intervene in the policing of camps privately patrolled by security officers

### **BOX 13.1**

#### **Unreported Male-on-Male Alcohol Related Assaults in the Minefields**

##### **Publican - Qld Mine fields**

‘... We had a few fights there (at the pub) but not much. ...We never ever got the police involved. If the police ever got involved, someone else usually rang them... I had three pretty strong young boys, my sons, and we could handle most situations; calm them down.’

##### **Local Police Officer – Qld Mine fields**

‘There’s people screaming and glass being broken, sometimes we can’t understand how people haven’t called us...’

##### **Senior Police Officer – WA Mine fields**

‘... (I) could end up at the hospital for a totally unrelated incident and find someone’s there who’s been really seriously bashed and had no intention of speaking to the police’

##### **Participant in pub brawling**

‘If there was trouble brewing, the glares across the bar as soon as the police aren’t around, bang: it would be on... It’s very much us and them; they sit there, you don’t look at them or talk to them and the only words really exchanged are: F... you, let’s fight... F... FIFOs, it’s them.’



**Senior Police Officer, in Charge of Police Station central to WA minefields**

'I gotta say, I don't believe that most assaults are reported to us. When you talk to people around town, and they say: "I was down the pub the other night and there was a big punch up", and then you get into work and there's no report of it, and that can be for a variety of reasons. Either the guys have let off a bit of steam and sorted it out and don't want police intervention to resolve an issue; or someone wasn't seriously injured enough to warrant telling the police; or maybe the licenced premises are protecting their licence to an extent, because they know we keep records of every time we have to attend licensed premises to quell a disturbance.'

And how often would you have to do that?

'Pretty regularly... every night.'

'I've never drunk at some of the pubs in town mainly because I police 'em, but you hear from mates who do drink there, there was a punch up here, and a punch up there, and so on, and they never appear in our reports... *So my feeling is that crime stats are not worth the paper they're written on'* (emphasis added)

Source: Carrington, et al, (2011) ARC Final Report

- 13.6 There has been very little non-industry funded research into the impact of non-resident workforces on established rural communities, besides Carrington and Pereira's (2011a, 2011b) on-line survey into the social impacts of mining development in Queensland. Again we quote extensively from that survey the first of its kind in Australia.

**BOX 13.2**

- 75% felt mining developments with non-resident workforces housed in their communities had an adverse impact (47% very negative impacts and 28% a somewhat negative).
- 75% felt the impact on housing availability and 79% on housing affordability was negative
- 76% thought the impacts on local infrastructure was negative (and most very negative - 55%)
- 76% felt the impact on local services was somewhat or very negative;
- 63% felt the impact on amenities for recreation was either somewhat or very negative;
- 62% felt the impact on local employment opportunities was somewhat or very negative;
- 60% felt the impact on local business and economy was somewhat or very negative.
- 59% regarded the impact on crime and justice as adverse
- 58% felt the impact on community safety was adverse
- 55% felt the impact on lifestyle was negative

Far fewer respondents felt positive about the social impact of non-resident mining workforces on their local economy, infrastructure, employment and community wellbeing. The highest ranking perceptions about positive impacts were as follows:

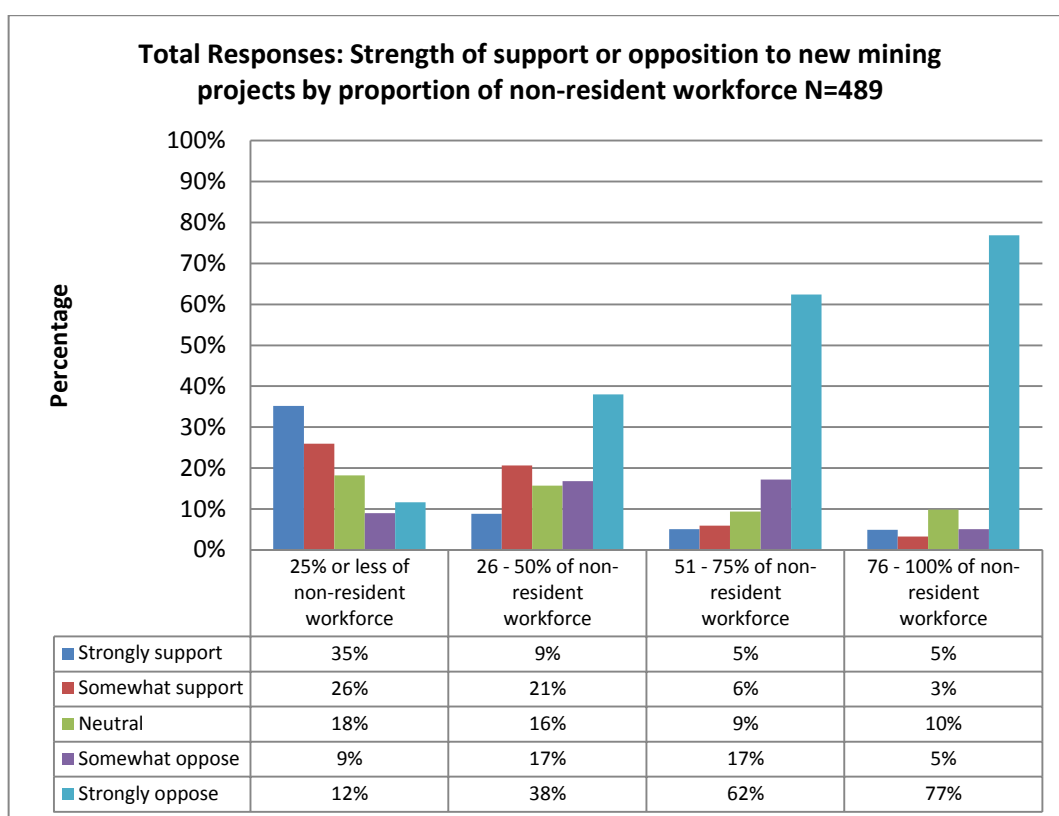
- 26 % thought the impacts on local economy would be positive
- 23 % thought the impacts on the local liquor outlets would be positive
- 21% regarded the impacts on local employment opportunities as positive
- 14% thought the impacts on local amenities for recreation would be positive

Only

- 11% regarded the impacts as having a positive impact on their lifestyle
- 10% regarded the impacts as positive for overall community wellbeing
- 9% were positive about the impact on local infrastructure
- 9% were positive about the impacts on housing and rental availability
- 7% were positive about impacts on community safety
- 6% were positive about impacts on crime and justice
- 6% were positive about the impacts on housing and rental affordability

(Source: Carrington and Pereira, 2011b)

13.7 The particular originality and significance of this study is the finding that the majority of respondents (61%) supported new mining projects with an expected non-resident work force of 25% or less, but most (82%) opposed the development of new mining projects planning to recruit a non-resident work force in excess of 75%. In other words the majority supported mining developments reliant on non-resident workforces, as long they were sustainable and did not threaten the social character and functioning of the community. These results support the study hypothesis that the social license to develop new mining projects is strong for projects requiring a 25% or less non-resident workforce, diminishes significantly thereafter and is very weak for projects planning to recruit a non-resident workforce in excess of 75% (see Carrington and Pereira, 2011a, 2011 b<sup>iv</sup>).



Source: Carrington & Pereira, 2011a and 2011b

13.8 A small but growing body of research has identified a range of social, human and economic consequences that non-resident workforce arrangements have on established rural ‘host’ communities (Beach et al., 2003; Beach and Cliff, 2003; Carrington et al., 2010, 2011; Carrington and Pereira, forthcoming; Colley 2005; CSRM, 2007; Doukas et al., 2008; Gallegos, 2005; Gillies et al., 1991; Haslam McKenzie et al., 2008; Jefferson and Preston, 2008; Lockie et al., 2009; Lord, 2008; Lozeva and Martinova, 2010; Mayes, 2008; Petkova et al., 2009; Rolfe et al., 2007; Storey, 2001, 2010; Venables et al., 2004). Some of the distinctive features of non-resident workforce arrangements and their impacts on ‘host’ communities identified in this body of research include:

13.9 Non-resident workers are usually accommodated in distinctive segregated work camps most of which are effectively ‘closed communities’ (that is, closed to outside visitors). This limits the potential for ‘normal’ interaction between out-of-town workers and local residents and generates tension.

- 13.10 Use of non-resident workers creates or increases gender imbalance in host communities as the large majority (80-90%) of these workers are males. Most recent labour force statistics published by the Australian Bureau of Statistics (ABS, 2011: Cat. No. 6291.0.55.003) show that males represented 86% of those employed in the mining industry as defined by the Australian and New Zealand Standard Industrial Classification (ANZSIC).
- 13.11 This gender imbalance exacerbates the masculine culture of this employment sector which women struggle with and consequently their direct employment in the sector (which includes many types of jobs other than mining and exploration such as construction, surveying, transport, maintenance, product processing, catering, cleaning, security) is more likely to be short-term. The increase in NRW is reversing the trend for increasing number of women entering the mining industry.
- 13.12 Due to the distinctive differences in lifestyle and community connectivity between non-resident workforce and the remainder of the population, non-resident workers have limited identification with local communities and difficulties bonding with the host community.
- 13.13 High workforce turnover rates and population instability makes it more difficult to build and maintain social cohesion, which may lead to: reduced community involvement; weakening social networks; difficulties for sporting clubs and community associations to remain viable; greater social dislocation; and diminution, even loss, of community identity.
- 13.14 Work camps within or in close proximity to towns contribute to declining amenity aesthetically and socially, particularly as a result of changing 'entertainment' regimes provided in some public spaces such as hotels to satisfy demands of non-resident customers working 12-hour shifts on extended work cycle rosters.
- 13.15 Work camp provisioning has traditionally been supplied from outside host towns and regions (for supplies and services such as food and beverages, laundry, even newspapers), exacerbating fly over effects on the local economy.
- 13.16 Economic 'fly-over' effects are the norm with moneys earned by non-resident workers not spent locally except in the pubs and, for DIDO locations, service stations; historically, regional Australia has received minimal share of the benefits of resource project developments although Western Australia's Royalties for Regions program is going some way to address this.
- 13.17 Favours a non-resident workforce over local residents results in a failure to provide employment and training in regional areas and fosters social division.
- 13.18 Non-resident workforce arrangements contribute to the long term population decline of families as a proportion of the community.
- 13.19 Support for these workforce arrangements also cultivates the need for the children of workers who settled in mining towns to leave the area in order to find work which, ironically, could be located in their own area.
- 13.20 The erosion of economic diversification has the potential to erode future viability contributing to the long-term unsustainability of rural towns.
- 13.21 Non-resident workforce arrangements have the potential to undermine government policies (if in place) with respect to regional growth and prosperity.

#### 14. Concluding Comment TOR 3

- 14.1 The cumulative social impacts of mining and resource developments reliant on non-resident workforces on host communities is a growing social justice issue that requires strong Australian Government leadership in formulating a national policy framework to guide sustainable mining development into the next millennium. (see TOR 10)

#### 15 Terms of Reference 4

##### **The impact on communities sending large numbers of FIFO/DIDO workers to mine sites**

- 15.1 This is an important albeit essentially neglected area of research. Impacts are more keenly experienced in smaller rural communities than in the large cities. While some regard supply of NRWs to the resources sector as one way of addressing local unemployment issues, employers will always show preference for experienced operators.

#### 16 Terms of Reference 5

##### **Long term strategies for economic diversification in [communities] with large FIFO/DIDO workforces**

- 16.1 For resource sector industries and governments to comment.

#### 17 Terms of Reference 6

##### **Key skill sets targeted for mobile workforce employment, and opportunities for ongoing training and development**

- 17.1 For resource sector industries and governments to comment

#### 18 Terms of Reference 7

##### **Provision of services, infrastructure and housing availability for FIFO/DIDO workforce employees**

- 18.1 A consistent concern raised by residents of communities affected by mining developments is the drain on services, infrastructure and the affordability and availability of housing. Non-resident workers exacerbate this as they are rarely adequately recognised statistically as part of the population of a locality (a measure used to determine eligibility for funding, service provision and regional infrastructure development) although their numbers may significantly increase the 'full-time equivalent' population serviced by local and state governments and service providers. Concurrently, demand on local services and facilities are increased for a population which is statistically not recognised, exacerbating infrastructure lag and drain on services. This was a key concern raised by respondents to Carrington and Pereira's survey quoted in the box below.

#### **BOX 18.1**

A vast number of comments consistently highlighted the strain placed on local human, social and medical services and infrastructure. One respondent even likened the social impact to third world communities. *'This is an ongoing battle in X as well as other mining towns. Roads, hospital, water & sewage fast falling into 3rd world standard, not to mention the state of some rental houses & parts of*

*the town resembling Soweto.'* Another respondent complained that *'The township becomes very disjointed. There is the impact on infrastructure, social issues affecting individuals, families and the community at large...'* This comment represented one of a large number of respondents who stressed the strain on human services and local infrastructure. *'A Non-Resident workforce puts strain on the local Hospital, Ambulance, Fire Fighters and also puts a lot of extra strain on our already damaged highways.'* The lack of meaningful contribution to the local community by a non-resident workforce was a source of resentment, as this comment illustrates.

*'I do not support the housing of non-resident workers in temporary accommodation as this does not make any money for the local economy at all - most of these workers do not use any of the local facilities as they are either at work or asleep. They only see the town when they drive in and out of it.'*

#### **Impact on Housing and Rental Availability and Affordability**

The impact of mining development on local housing and rental availability and affordability, identified as a major issue for towns undergoing rapid socio-demographic change due to the mining boom, (Haslam McKenzie et al., 2008), provoked a large number of passionate responses like this one.

*'Greedy landowners and business owners should not price their products and/or services for the mine income as they perceive it. This is one of the main reasons why people won't move families to the areas as rentals as high as \$1-3000 are outrageous even if 10-12 people share a home revolving around the shifts they work.'*

Again local residents are perceived as being lumbered with the burdens as this comment illustrates. *'Permanent residents cop all the negative effects of mining, such as dust and the associated medical issues, noise, increased prices, housing affordability and limited choices of housing options.'* There was a sense of resignation and inevitability of non-resident work force arrangements remaining a feature of mining development. However some respondents, like the one below, pointed out that it is possible to mitigate some the adverse consequences.

*'Whilst it is generally preferable for any workforce to be housed in permanent accommodation this is not always possible and the workers themselves are not always willing to do so. Also cannot always source the required workforce locally, so sometimes this is the only option available. However, where this occurs it would be much better received by the community if it was kept to a minimum and there were a greater recognition and compensation for the impacts that both the workforce and the project/venture itself had on the community. Impacts can vary depending on type of accommodation - if construction camp then low impact on housing affordability and availability but if sourced from local accommodation, high impact on this aspect.'*

Source: Carrington & Pereira, 2011b forthcoming.

## **19.1 Terms of Reference 8**

### **Strategies to optimise FIFO/DIDO experience for employees and their families, communities and industry**

- 19.1 While important, we have not undertaken any research into this issue. Clearly there is a dire need for the provision of men's health and wellbeing programs for non-resident workers housed in camps; an urgent need to introduce and monitor consistent minimum camp standards across Australian jurisdictions; and an abundance of creative design opportunities to replace the anachronistic 'donga' model of work camp, with an eco-retreat model, more conducive to human habitation. There is also a need to think creatively beyond geographically bounded supports for families to assist the unique challenges faced by the families of non-resident workers. *FIFO Families* and *Mining Family Matters*, would have considerable insight into the issues in need of addressing. To minimise the adverse impacts

and optimise the positive, it is vital that mining companies actually negotiate their social licence to operate with community members and their representatives, such as *Mining Communities United*.



## 20 Terms of Reference 9

### Potential opportunities for non-mining communities with narrow economic bases to diversify their economic base by providing a FIFO/DIDO workforce

20.1 We have not undertaken any research into this issue.

## 21 Terms of Reference 10

### Current initiatives and responses of the Commonwealth, State and Territory Governments

21.1 This is a matter for Commonwealth, State and Territory Governments to answer. However we make the following observations based on our knowledge of the challenges posed by the rapid escalation of non-resident workforces in the resources sector.<sup>v</sup>

21.2 The resources sector in Australia has been at the forefront of a trend to encourage the trading of rights, security and conditions for high wages. A longer term, more holistic view of the role of work in relation to well-being, personal identity, family and community is giving way to a narrower, shorter term focus on immediate economic benefits (Carrington and Hogg, 2011). With resource developers distanced from mining communities, with traditional employment relationships giving way to contract labour, collective representation of worker and community interests sidelined, and with high labour turnover and low job security in the industry, the temporal and social frame for monitoring and assessing harm and risk is inevitably attenuated.

21.3 The real problem lies in the fact that a 'political economy of speed', and a short term economic view frames the current resources boom (see Cleary, 2011 on this point). This is most obvious in the atomised figure of the non-resident worker whose participation in work is largely detached from conventional employment relationships and the social, communal and industrial solidarities that traditionally surrounded the workplace. Many may prosper in the short and long term from the generous economic benefits, but undoubtedly there are risks for individual, family, societal and community wellbeing in these new work regimes.

The real difficulty is that the very structures of the industry and the mindset widely shared by companies and governments ensures that the many of the risks will be so privatised and so diffused in space and time as to go unrecognised.

- 21.4 The hidden nature of the collateral impact on non-resident workers is exacerbated by confidentiality clauses inserted into workplace individual contracts and agreements. Block rosters, 12-hour shifts and FIFO/DIDO workforces ensuring continuous operations are intrinsically hostile to stable family relationships and routines and viable communities, as well as female participation in the industry. Clearly these are not matters of pressing concern to the resources industry and their likely collateral harms – perhaps in broken relationships, interpersonal violence, substance abuse and other self-destructive behaviours and so on – are distanced from view and effectively extruded from prevailing conceptions of corporate responsibility.
- 21.5 The real challenge for government is to recalibrate the frame of reference for assessing and responding to all the impacts of the mining boom, of which the escalating reliance on thousands of non-resident workers is just a part.
- 21.6 The projected cumulative social impact of at least \$174 billion mining of development heavily reliant on recruiting many thousands more non-resident workers to be housed in camps near existing rural communities is likely to be substantially negative. Efforts to address the adverse effects have been limited, but still noteworthy. These include Queensland’s social impact guidelines introduced in September 2010 and Major Resource Projects Housing Policy released 25 August 2011, Western Australia’s ‘Royalties for Regions’ program and the Australian Government’s proposal for a Minerals Resource Rent Tax (Swan, W. PR, 1 June 2011). While the Queensland Government Social Impact assessment process and Resource Projects Housing Policy are big steps in the right direction, alone these policy instruments are insufficient to address cumulative social impacts of mining developments reliant on non-resident workforces over time.
- 21.7 State governments who grant mining licenses and regulate the industry also earn a share of the minerals extracted through royalties. Last year Queensland and Western Australian governments collected around \$6 billion. State governments consequently have a collision of self-interest with mining companies as both profit handsomely from the speedy extraction of resources. There is no independent broker in this mix to make decisions about mining projects reliant on non-resident workforces in the long term best interests and prosperity of the nation. This is why strong Australian Government leadership through the policy making processes of federalism are absolutely vital.
- 21.8 The Australian Labor Government’s proposal for a mining super profits tax was initially driven by a desire to secure some of the wealth of the boom for future generations, however a watered down version has left some commentators wondering whether it will generate sufficient funds for this purpose (Cleary, 2011). Nevertheless, the 2011 budget strategy of leveraging off the resources boom to revitalise regional Australia gives some hope for optimism. Along with this strategy has come newly formed body, Regional Development Australia an Australian government initiative that brings together all levels of government in a shared responsibility model of federalism. Regional Development Australia

([www.rda.gov.au](http://www.rda.gov.au)) embodies the potential to engage all key stakeholders across, government, industry and local community, to generate long term consensus building solutions, especially in regards to infrastructure investment. However unless this strategy is accompanied by a self-enlightened resources sector acting in concert with mining communities to maximize their social license to operate, the burdens of a boom reliant on a non-resident workforce will continue to be disproportionately felt by these communities.

- 21.9 The uneven distribution of the benefits and burdens of a mining boom increasingly reliant on non-resident workers is a national social justice issue that has received too little attention. There is an urgent need for a national policy framework to guide the sustainable development of Australia's resource stocks such that rural societies surrounded by 'dongas' at the epicentre of the boom share not just the burdens but also the benefits.



**Figure 22.1 Dongas erected close to existing townships**

## 22 Terms of Reference 11

### Any other related matter

- 22.1 We have pointed to some available evidence of the actual and likely social impacts on communities, workers and their families of mining developments reliant on large non-residential workforces, but much more independent, broad-based research is needed to inform appropriate policy responses.

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## Endnotes

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<sup>i</sup> According to ABARE, in April 2011 there was \$174 billion invested in projects at advanced stages of development. A new listing is due out this month.

<sup>ii</sup> For details of the methodology see Carrington et al, 2011, Final Report ARC, Safeguarding Rural Australia: Addressing Violence and Masculinity in Rural Settings, QUT, unpublished.

<sup>iii</sup> Data limitations on measuring NRW occur for a number of reasons which include:

- Quarterly ABS labour force statistics published by the ABS (ABS Cat. No. 6291.0.55.003) for mining industry employees include only those directly involved in mining and extraction and immediate support services such as exploration. These data, therefore, excludes the many tens of thousands directly employed by the resources sector in regional Australia in other capacities including construction (of mines, rigs, wells, pipelines, processing plants, workers' camps, railways, roads, and so on), transportation, processing, maintenance (which procedures generally require large numbers during scheduled shutdowns), and those providing catering, cleaning and security for work camps. Because all-inclusive numbers of workers employed by the resources sector cannot be sourced, estimates based on 'best guess' assumptions of the ratio of resident workers to NRWs of the total employed in these capacities cannot be attempted with any degree of confidence.
- Industry is not obliged to and does not regularly publish these workforce data. Some numbers are provided by some companies (for example, in Environmental Impact Statements (EISs) and Sustainability Reports). However, such data are usually dated by the time they are available in the public arena, and can often be ambiguous; hence they are of limited value.
- There is lack of clarity about what workforce numbers supplied by industry and State governments actually represent. For example, worker numbers given for day-to-day project operations and construction work sometimes include only those rostered 'onsite' for both the 12-hour day-and night-shifts. Thus only those NRWs in the population at any one time (that is, those in the work cycle of their rosters and thus part of the full time equivalent (FTE) population) are included. Workers who have travelled elsewhere (most likely home if they have one although clearly some don't but they are still obligated to fly 'out'/drive 'out' to another destination due to accommodation shortages) during the leave cycles of their rosters are excluded.
- Furthermore, estimations of total number of workers for any one site cannot be attempted by application of a formula based of roster patterns. This is because rosters are unknown. Even if this information were available, rosters are variable not only between work sites but often for different job at a single site. (Rosters of two weeks on followed by one week off or 9 days on, 5 days off have become common although are by no means standard.)

- Depending on project location, some resource sector workers will most likely reside with their families within their workplace community. Once again, the ratio of resident workers to NRWs within different communities is usually not published. What is known is that, in some locations, the proportion of residents in resource sector workforces is declining. Many developers show preferences for employing NRWs even to the extent of excluding locals from being able to lodge job applications. (Refer to, for example, the BHP Mitsubishi Alliance (BMA) proposal to move from a 70% non-resident workforce to 100% NRWs at its new Caval Ridge mine in Queensland's Bowen Basin.) The reverse is also true with some developers limiting the proportion of NRWs at sites with one alleged reason for capping being awareness of the negative impacts that large numbers of NRWs can have on local communities.
- Place or Work (POW) is the only Census question that can assist with providing some information about the non-resident workforce (in 2011, Question 41 on the Household Form; Question 43 on the Personal Form). POW cannot be analysed with confidence because of the different interpretations for 'place of usual residence' (PURP). ABS instructions clearly state that:

Where a person usually lives is the address where they have lived, or intend to live, for a total of six months or more in 2011. If a person has not lived at the same place, or does not intend to do so for six months or more in 2011, write 'NONE' in the 'Suburb/Locality' box.

Clearly many tens of thousands of NRWs in the 2006 Census, for instance, identified 'home' as their PURP in spite of the fact that they spent the majority of their time living elsewhere, proximate to their workplace. The correct response to this question was further clarified for the 2011 Census with FIFOs/DIDOs instructed to nominate their PURP as the location of their work cycle accommodation if they spent more time there than elsewhere in their leave cycles. This suggests POW data comparisons between the 2011 Census and earlier ones could be even further compromised.

An additional impediment with POW data is that they can only be sourced (for a fee) through the ABS Information Consultancy Service and the type and amount of data that can be requested is limited due to data management and handling logistics.

Important distinctions between WA regions with prominence due to minerals and energy activities and those in the eastern states cause different impacts on host communities. In WA, most resource sector activities are essentially in remote regions and/or where mining and energy industries dominate the local economy. In Queensland and NSW, existing, new and extension projects tend to be located in established settlements where agriculture has been the traditional industry.

- <sup>iv</sup> This independently funded research went through a rigorous ethics approval process, has been subject to international and national peer review, by academics with high level of expertise and recognition in the field as methodologically sound, and is forthcoming in the high quality *Journal of Rural Society*.
- <sup>v</sup> This section draws on analysis from Carrington and Hogg 2011 and Carrington and Pereira, 2011b forthcoming.