

How is Onshore Gas Development Benefitting Rural Queensland?*

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Abstract

To what extent has \$60 billion in onshore gas development benefitted communities in Queensland, Australia's Surat Basin? Providing local benefits from extraction of an export commodity affects an industry's social license to operate. Evidence on the long-term benefits of boom-bust-and-recovery cycles from onshore oil and gas development in areas of the western US is equivocal. In light of aspirations for the traditionally agricultural towns of southern Queensland, the extent of such benefits and the extent of impacts have been assessed by analysing historical trends in key indicators – such as population, housing costs, employment, and crime rates. The assessment has included extensive interviews of residents, business owners, farmers, and others who have experienced the opportunities and impacts. The research suggests a distribution of the industry's cumulative impacts, including benefits to some and stresses to others. Simultaneously, there are also impacts from periods of drought and flood and relatively recent amalgamation of local governments. Research has revealed lingering distrust from transgressions and omissions during the exploration and subsequent, relatively rapid, construction phase, though improvements in company practices have been reported. Concerns persist among some about co-existence between farming operations and onshore gas construction, operation, and maintenance. With the construction phase abating and the numbers of fly-in/fly-out workers declining, there are still over a thousand wells per year to be drilled during the next 20–30 years in a region of roughly 40,000 square kilometres and 40,000 inhabitants. Questions remain about the extent to which the region – which also exports coal, wheat, and beef - will ride a roller coaster as international gas prices fluctuate and geology reveals how much of the natural gas is present. To what extent can this development help the region achieve its aspirations?

Introduction

Development of the substantial coal seam gas (CSG) resources in the Darling Downs region of Queensland has offered local towns attractive prospects for growth and the promise of economic opportunity. These prospects have been accompanied by high hopes in government and business that the CSG boom (a total of \$60 billion in investment for an estimated 30 years of gas extraction) will counteract a widespread decline of population and economic stresses caused by drought in rural areas. The effects that the relative rapid CSG development has had on five towns in the region is described in this paper on the basis of time series data for a set of socioeconomic indicators supplemented by

interviews of key local stakeholders. Our analysis suggests valuable lessons for the future of this region and other regions facing such extensive resource development.

Impacts of Multiple Resource Projects

The onshore gas operators in the region have undertaken measures that demonstrate a commitment to identifying and mitigating potentially negative social impacts as well as satisfying requirements of conditions of approval agreed on with the State of Queensland's Coordinator-General. Despite these measures, the social impact management plans (SIMPs) developed for each project are typically centered on the effects of one project joint venture and its contractors with a focus on the towns central to their construction activities. The aggregated, 'cumulative' impacts of CSG development across the region and over time need to be understood, because effects - and interventions designed to mitigate effects - interact in time and space and cannot be addressed in isolation (Franks, Brereton and Moran 2013; Everingham et al. 2013). Multiple projects in one region that are governed by different organisations, each of which has its own relationship to government and the nearby communities, add a degree of complexity that is characteristic of what scholars of public policy call 'wicked problems' (Head and Alford 2013). Put simply, wicked problems defy simple and consistent solutions.

Our research has identified a range of impacts during the CSG construction phase that have both positive and negative dimensions. Unemployment has dropped, but skills shortages have been felt. Housing prices have spiked, but population figures have moved steadily upward nonetheless. Reported crimes in some categories have increased, but they have remained steady in other categories.

An influx of non-resident workers in fluorescent work gear (referred to locally as 'glow worms') has changed the look and character of some towns. Also affecting the character of certain towns is an outward migration of older residents who took the opportunity to sell their house for a good price during a local real estate boom accompanying the project development. Local residents have reported that towns were losing their volunteering resources and their informal childcare providers. These results suggest a degree of 'social disruption' that is often found in rural communities experiencing rapid resource development (Freudenberg 1982; Smith, Krannich and Hunter 2001; Petkova et al. 2009; Jacquet and Kay 2014).

While many of the social and economic impacts of CSG development could be seen as obvious and expected, others could be characterised as indirect and unanticipated. Some of these impacts could become problematic if left unmanaged. For example, the pace and scale of development experienced in the Downs is unprecedented for an Australian regional area. Such rapid change can often lead to social instability, a reduction of community cohesiveness, and perceptions that individual and community wellbeing are in decline (Freudenberg 1982; Smith, Krannich and Hunter 2001; Walton, McCrae and Leonard 2014). Evidence of these changes suggests that the social evolution of the region has been presented with challenges, despite the positive impacts of the significant financial injection from CSG development (with one company's local 'spend' in one year equaling about six-percent of the gross regional product).

Measuring These Cumulative Impacts of Onshore Gas Development

Cumulative social and economic impacts involve a complex array of factors (Franks, Brereton and Moran 2013), as noted. Often, the positive impacts are immediate, tangible and measureable (Petkova et al. 2009). For example, employment opportunities emerge, high wages are on offer, road and infrastructure improvements are undertaken, and local businesses grow. Negative impacts can be slower to emerge, can have their own follow-on effects, are less visible, and can be more difficult to measure. For example, increasing transience – e.g., movement of contractors into the region for specific aspects of construction – can contribute to disruption in school classrooms due to student turnover (which local principals have reported) and ongoing needs to train new staff (which local business owners have reported). Additionally, impacts are experienced differently in different towns according to the town's size, proximity to the resource development (for example, is there a camp for non-resident workers nearby), and pre-existing socio-economic profile (vibrant or with a disproportionate share of low-income earners, which rural regions can have).

To understand the range and magnitude of these cumulative impacts, our research team assessed trend data going back fifteen years and employed a participatory approach to generate a compact set of socio-economic indicators. These indicators monitor changes in core community 'assets' that include human and financial capital, infrastructure, skills base, social connections, and the environment. The particular indicators that have been prioritised in the research relate to population, income, employment, housing affordability, safety, and wellbeing. These priorities were selected with input from members of the community, government, and industry.

The size of the set of indicators was determined by a drive to identify the minimum amount of data needed to characterise 'how the town was going'. Additionally, the indicators selected needed to correspond with activities or information that could be seen in the town – such as prices for houses evident in the windows of real estate agencies.

For each of the chosen indicators, time series data was collected for five towns in the Western Downs local government area, dating back to 2001. Historical data enabled the identification of long-term trends in indicators from before CSG development, through the peak construction period (2009-2014) and into the relatively more stable 20 or 30 years of operations. The fifteen-year history offers three benchmark years when the Australian census was held – 2001, 2006, and 2011. Support has recently been obtained to extend this tracking to 2017 and to characterise neighbouring regions affected by CSG development to the west, east, and north.

The indicator data has been presented as timeline charts, which were taken to key stakeholders in industry, government, and the communities. The charts were used to stimulate discussion and assess the extent to which the data reflected the impacts that individuals perceived. The discussions about this data have enabled exploration of possible causal factors for certain changes (like spikes in rental housing costs) and how local residents and businesses responded to mitigate those impacts (such as subsidising the wages for service employees).

The accounts of individual experiences of these impacts suggested how impacts might have become, or might yet become, problematic. We distinguished between anecdotal evidence, rumour, and mechanisms of change that were supported by our trend data. In other words, this process of collecting and then 'ground truthing' data has allowed the team to compare evidence with perceptions of change.

Evidence versus Perceptions of Change

We employed ‘sociological sampling’ (Gold 1997) to identify key people in the towns, individuals whose line of work or recent experiences were seen by others as representative of a specific area of interest (relevant to the indicators). For example, we interviewed long-established real estate agents, business and community group leaders, local police, and staff in government agencies. The people whom we interviewed confirmed that most of the indicator trends accurately reflected their personal experiences, but others did not. Most of these people thought that average personal income levels would be higher than the data showed, as they explained that they viewed the resources sector as paying high wages.

Interviewees spoke of a ‘two-speed economy’ that they had noticed emerging in their communities. They noted that certain businesses and individuals seemed able to win jobs or contracts associated with CSG development and could prosper, while others were perceived to have missed out, receiving few benefits or even suffering from additional stresses from the CSG developments. Some identified what they saw as an apparent arbitrariness in the awarding of contracts and in selection of where community investment by CSG companies occurred. Such concerns about what is known in academic circles as procedural justice and distributive justice contributed to reported feelings of bitterness and divisiveness in the communities between those seen to be benefiting (the ‘haves’) and those not seeming to benefit (the ‘have-nots’).

Nonetheless, the tangible, positive outcomes from community investment by CSG companies were noted as being generally appreciated. Interestingly, those interviewed did not appear to share a common understanding of the logic or strategy in CSG companies’ delivery of these community initiatives. In general, they stated a desire to see what they seemed to feel would be a more equitable distribution of social and economic benefits from CSG development, a predisposition that is characteristic of Australian culture.

Perceptions of population growth are centered on the influx of non-resident workers in an area that – despite a national trend toward decline in rural agricultural towns - had a relatively steady population. Newcomers appear to be a result of the ‘multiplier effect’ of the CSG development, where between two (Measham and Fleming 2013) and five (Rolfe et al. 2011) services and other industry jobs are created for every one CSG job. That is, people have migrated to the region responding to shortages in both skilled and unskilled labour, whether in skilled areas (e.g., electrical contracting) or unskilled (e.g., food service).

The town of Chinchilla, a hub of CSG activity, was described in an interview as once having been a “sleepy town of around 3,000 people”. Since 2008, population in Chinchilla has increased at around 3–4 per cent per year. Annual growth rates reached nearly 10 per cent in 2008 and exceeded 5 per cent in 2011. A population increase of from 5 per cent to 15 per cent per year matches criteria for designation as a resource ‘boom town’ according to studies in the western United States (Gilmore 1976; Jacquet and Kay 2014). In those regions of North America, a rapid increase in population was documented as overstressing the ability of local government and business to provide needed social services. Having inadequate social services can make an area less attractive to live and invest in. That can generate a downward spiral as residents leave, and the local skills base is depleted. (Gilmore 1976; Jacquet and Kay 2014). A large number of non-resident workers have stayed temporarily in towns or in nearby workers’ camps. The small Queensland town of Miles, for example, has a steady town population of around 1,200 but a non-resident workforce in town and in nearby camps ranging up to 1,000. One interviewee lamented how “nine out of ten people you see on the

street are strangers”. In a small country town with traditionally strong social cohesion, the presence of “strangers”, mostly men, was described by local residents as being “disturbing” ([Figure 1](#)).

With a high proportion of unfamiliar men in town, interviewees relayed how some local women feared for their and their children’s safety. It was reported that women changed their socialising behaviours and avoided those pubs that tended to be populated mainly by CSG workers. However, the number of reported assaults on women did not increase, according to local police statistics. That result is contrary to findings for a large number of North American energy ‘boom towns’ (Haggerty et al. 2014) and other resource regions in Australia (Carrington, Hogg and McIntosh 2011). Over time, the initial fear of crime reportedly dissipated as residents stated that they “got used to” the presence of non-resident workers.

Unexpected and Indirect Impacts

Indirect, and often two-pronged, impacts of CSG developments on the region’s social structures, culture, and wellbeing were noted. For example, the influx of non-resident workers as part of the CSG construction phase created significant financial benefits for those providing temporary accommodation and housing. Motel rooms were fully booked year round with few vacancies available for tourists. As a result, tourism-based enterprises reportedly suffered.

Similarly, rising house and rental prices caught the attention of property market investors. A proportion of houses sold by long-term residents were bought by investors in distant capital cities (e.g., Melbourne) for use as rental properties. The level of investment in the local housing market resulted in the cost of housing being characterised ‘unaffordable’ for many local renters, such as those in government employment – teachers and police officers. Real estate agents stated that lower-income families had been forced to move to smaller towns away from the CSG development and in the regional city of Toowoomba ([Figure 2](#)).

The larger and more economically diverse town of Dalby remained relatively affordable. As a result, some CSG-related workers reportedly moved from Chinchilla or Miles to Dalby. Their daily commute to work sites west of Dalby increased traffic on the roads. One long-term resident in Dalby noted how this commuting was a reversal of the traditional trend, where people living in the smaller towns would travel to Dalby for work opportunities. One can attribute such shifts and travel of materials and workers to rural worksites as contributing to traffic becoming the most common complaint received by the CSG companies’ community engagement staff. So, the issue of where housing was available in relation to work sites can be seen as inherently related to issues around traffic volume and road safety.

Camps constructed to accommodate the increasing number of non-resident workers did not become operational in time to avoid a housing shortfall. CSG companies were required, as an outcome of their Queensland government approval process, to construct permanent housing in some towns. Other housing was built by private developers attempting to capitalise on the property ‘boom’. Some houses were purpose-built and were noted to be unsympathetic to the rural character of the towns. Homes with four or five bedrooms, each with an ensuite, were described by local residents as potentially being difficult to sell as family homes in the future.

The need for a large non-resident workforce is now ending with the decline of CSG construction activity. Pipelines, compression stations, and water treatment facilities have, for the most part, been built. The end of the construction phase has been followed by a rise in vacancies. Chinchilla is reported to now have 230 vacant houses, a vacancy rate of 20 per cent. One real estate agent described the situation as “disastrous”.

A Town-Level Focus and Cumulative Regional Effects

Examining individual experiences at town level has revealed how each town has been impacted differently and seems to have responded differently to changes. The level of benefits and the degree of negative impacts in each town appears to have been influenced by town size, connectivity – that is, ease of access to key services, and the degree of fragmentation in decision-making, i.e., the extent to which decision-making can potentially be misaligned between local government and the private sector.

Despite such evident town-level differences, natural gas operators currently report the expected, and measured, socio-economic impacts of their activities mainly at the regional level only. Our analysis shows that regional changes have statistically been deceptively small. Our study suggests that more reporting at the town scale is needed. Though the companies are reporting regionally, their staff tends to describe company construction, operation, and staffing in relation to specific towns, usually the ones closest to their gas field leases. A positive impact in these towns – e.g., through local community investment and local procurement of goods and services - enables the company to earn a ‘social license to operate’.

However, it can be argued that the well-intended policies and protocols employed by a single company for managing impacts at the town level ought to be coordinated and aligned with the efforts of other companies in that town and in the region. To some extent, the four natural gas operators in the Western Downs have coordinated their efforts. Extending that coordination both locally and across the region could see synergies arising among beneficial impacts to counteract potentially negative, cumulative impacts. Onshore gas development can benefit southern Queensland not only through such synergies. It can provide lessons about mitigating or enhancing social and economic impacts that can lead to less local stress and greater lasting gains from future resource development.

References Cited

Carrington, K., R. Hogg, and A. McIntosh, 2011, The resource boom's underbelly: Criminological impacts of mining development: Australian & New Zealand Journal of Criminology, v. 44, p. 335-354.

Everingham, J., N. Collins, D. Rodriguez, J. Cavaye, S. Vink, W. Rifkin, and T. Baumgartl, 2013, Energy resources from the food bowl: an uneasy co-existence. Identifying and managing cumulative impacts of mining and agriculture: Project report, CSRM, The University of Queensland, Brisbane.

Franks, D., D. Brereton, and C. Moran, 2013, The cumulative dimensions of impact in resource regions: Resources Policy, v. 38, p. 640-647.

Freudenberg, W., 1982, The Impacts of Rapid Growth on the Social and Personal Well-Being of Local Community Residents: in B. Weber and R. Howell, (eds.), *Coping With Rapid Growth in Rural Communities*. Boulder, Colorado: Westview Press.

Gilmore, J.S., 1976, Boom towns may hinder energy resource development: *Science*, v. 191, p. 535-540.

Gold, R.L., 1997, The Ethnographic Method in Sociology: *Qualitative Inquiry*, v. 3, p. 388-402.

Haggerty, J., P.H. Gude, M. Delorey, and R. Rasker, 2014, Long-term effects of income specialization in oil and gas extraction: The U.S. West, 1980–2011: *Energy Economics*, v. 45, p. 186-195.

Head, B.W., and J. Alford, 2013, Wicked Problems: Implications for Public Policy and Management: *Administration & Society*, v. 47/6, Web Accessed November 15, 2015, <http://aas.sagepub.com/content/early/2013/03/27/0095399713481601>

Jacquet, J.B., and D.L. Kay, 2014, The Unconventional Boomtown: Updating the Impact Model to Fit New Spatial and Temporal Scales: *Journal of Rural and Community Development*, v. 9, p. 1-23.

Measham T.G., and D.A. Fleming, 2013, Impacts of unconventional gas development on rural community decline: November 2013, CSIRO, Australia.

Petkova, V., S. Lockie, J. Rolfe, and G. Ivanova, 2009, Mining Developments and Social Impacts on Communities: Bowen Basin Case Studies: *Rural Society*, v. 19/3, p. 211-228.

Rolfe, J., D. Gregg, G. Ivanova, R. Lawrence, and D. Rynne, 2011, The Economic Contribution of the Resources Sector by Regional Areas in Queensland: *Economic Analysis and Policy*, v. 41, p. 15-36.

Smith, M.D., R.S. Krannich, and L.M. Hunter, 2001, Growth, decline, stability, and disruption: A longitudinal analysis of social well-being in four western rural communities: *Rural Sociology*, v. 66, p. 425-450.

Walton, A., R. McCrea, and R. Leonard, 2014, CSIRO survey of community wellbeing and responding to change: Western Downs region in Queensland: CSIRO Technical report, CSIRO, Australia.

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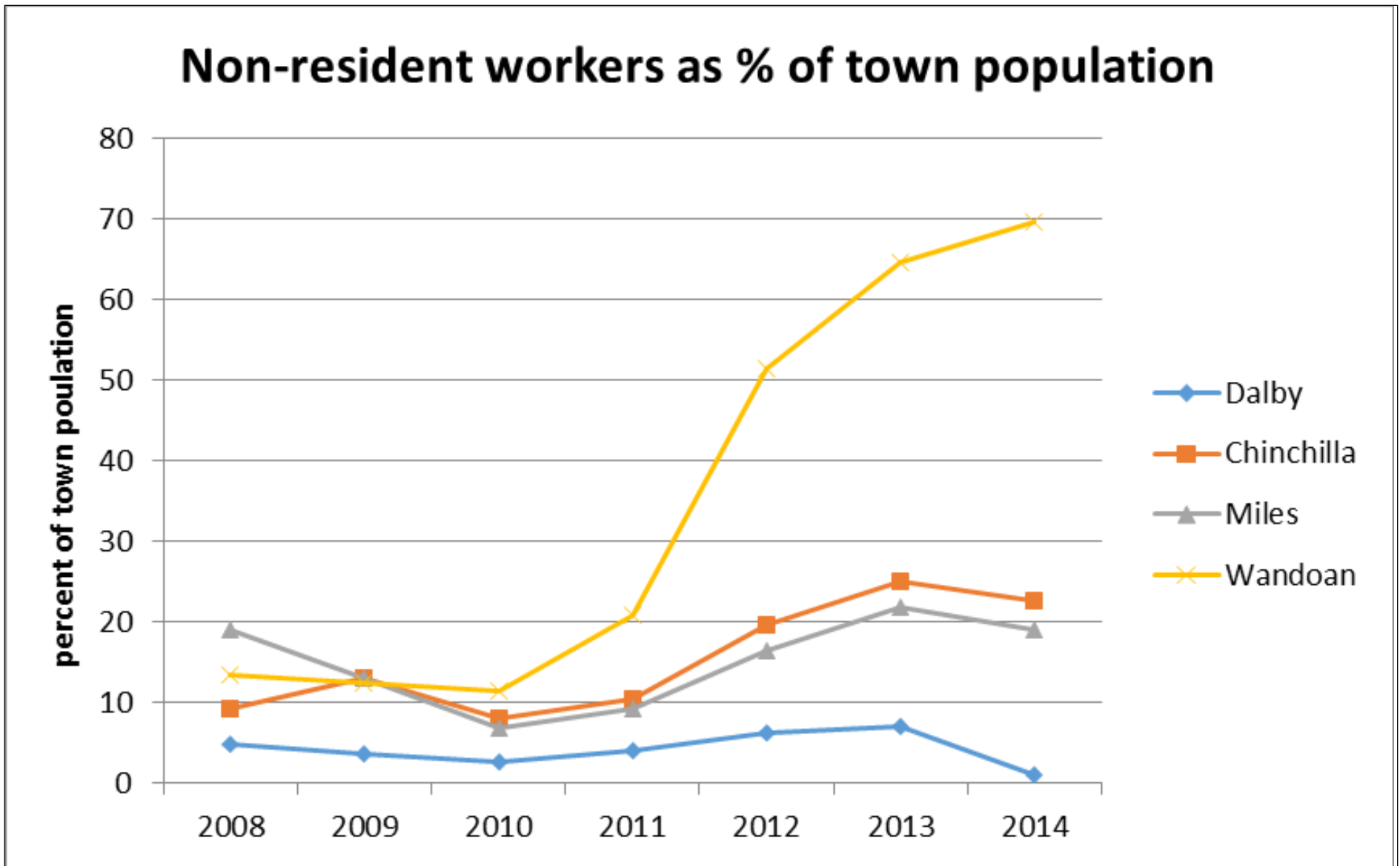


Figure 1: The proportion of non-resident workers brought by the CSG boom to each town and its surrounding farming district (+5km radius) suggests noticeable impacts for some towns and quite substantial impacts for others. Miles and Wandoan are small towns, Dalby and Chinchilla are larger. Source: Queensland Government Statistician's Office.

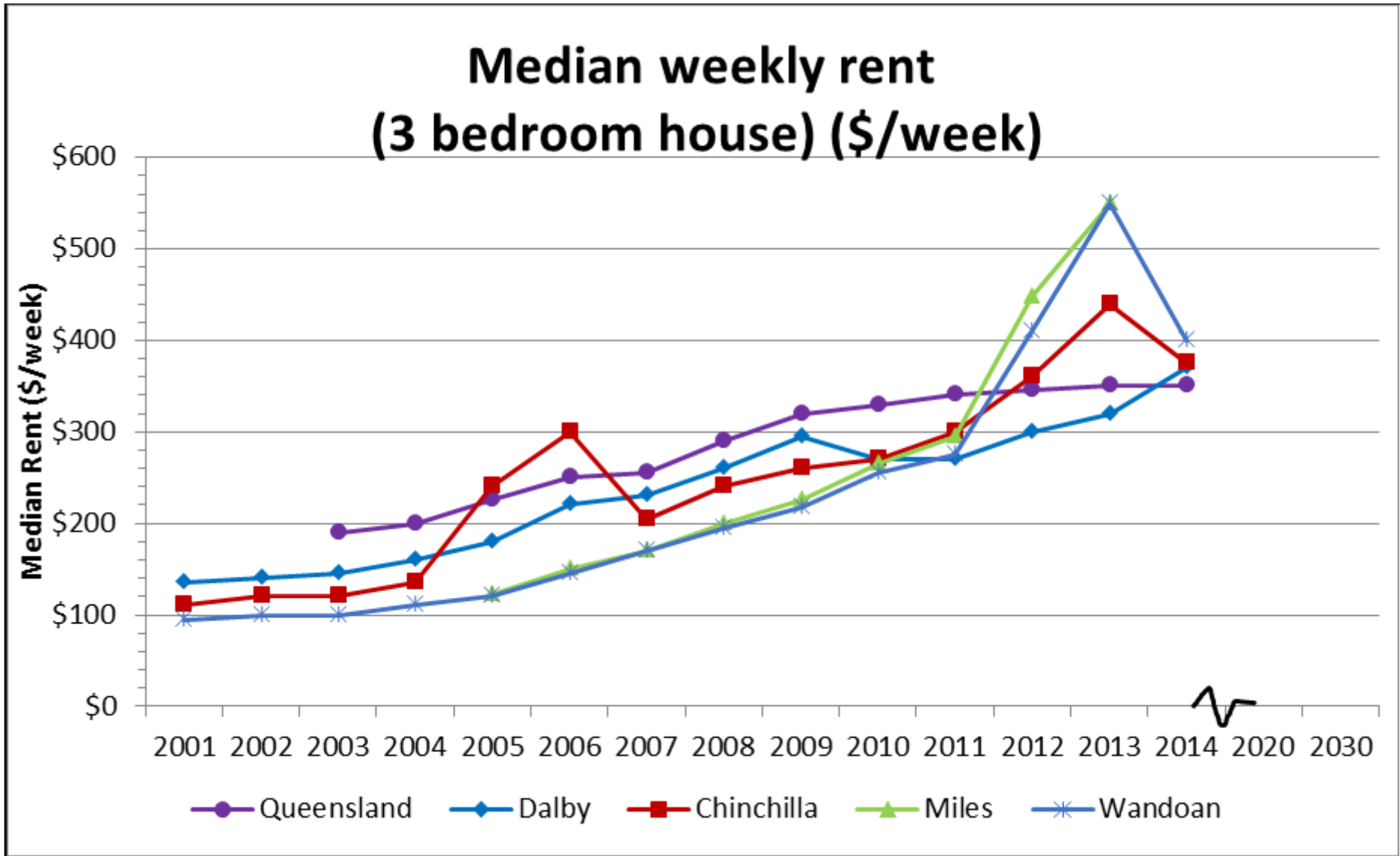


Figure 2: Spikes in median weekly rent correlate with peak CSG development activity. (The spike in Chinchilla rents in 2006 correlates with construction of a major power station). Source: Queensland Residential Tenancies Authority.