



# Guide to social and economic conditions reports

## Why focus on the underlying social and economic conditions?

The social and economic condition reports have three elements:

- a short overview of what is changing and why
- social and economic condition data describing the rate and timing of changes
- a narrative summarising the information provided to the MDBA during consultations.

The short overview draws out key insights from all of this information. No indicator alone

describes the changes and effects of multiple drivers of change in a community. All of these indicators help to describe the variations in the trends and rates of change in basin communities. The narratives help to interpret the data.

The community reports provide an overview of the social and economic conditions in 21 communities in the northern basin. They identify changes in community demographics, general social and economic conditions and employment. The combined changes, and the timing of those changes, indicate how various drivers of change are impacting on communities and affecting their

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adaptive capacity. Understanding the community's demographic and economic structure together with the land and water use characteristics across time enables a more informed analysis and understanding of contemporary changes in the community and how they might respond to additional sources of change.

The overview of each community's social and economic conditions helps to build an understanding of the relative importance of the different drivers of change across the 21 communities. Statistics on demographic changes, social and economic conditions and land use are presented in the context of the range of outcomes for the 21 communities and the average for those communities.

These social and economic condition reports help to both build the community-level modelling undertaken by the MDBA and to interpret the results. The reports should only be read in conjunction with the other documents prepared to support the estimate of social and economic change under different water recovery scenarios.

## Social and economic data

### What scales did we use for the reports?

In order to provide a sufficiently detailed report on the social and economic conditions of a community, three geographic scales were used, including 'towns' and the surrounding agricultural area. The third scale recognises the economic and social connections between communities. Much of the social and economic condition reports are based on the main town in each community. They are the base for economic and social activity in the community areas. Social and economic data for the towns was sourced from the Australian Bureau of Statistics (ABS) at the Urban Centre and Locality (UCL) level<sup>1</sup>.

The towns have very strong relationships with the surrounding farms. For the purposes of modelling

the economic characteristics of the communities, information for the surrounding farming area was therefore required. The surrounding agricultural area was based on the economic and social connectivity to the town identified during the early consultation stages (who businesses trade with) and by considering the location of the irrigation enterprises relative to the towns (see Appendix A). Relevant social and economic data was sourced for these surrounding areas by aggregating the postal area data sourced from the ABS. These community areas and associated data were then used for the economic modelling.

### What's happening in the community?

This section identifies changes in the population including underlying shifts in age distribution, Aboriginal representation, education levels, economic resources and socio-economic advantage and disadvantage. These changes will both influence and be influenced by changes in the economy, agriculture and water use in the community. A community's structure has implications for its capacity to adjust to changes such as water reform (see Sherrieb et al. 2010). Changes in social capital attributed to declining population can affect the availability of skilled labour (see Miller 2011) and the way communities respond for example, to increased agricultural activity in periods of high water availability, or to emerging economic opportunities such as mining, tourism and increased services.

### Why did we look at total population numbers?

Total population numbers are sourced from the 2001, 2006 and 2011 ABS census. The ABS census data for 2016 won't be available until mid 2017, thus our information relies on ABS data up to the 2011 census. Population numbers are provided for the whole community and the main town. The relative rates of change in the

<sup>1</sup> Centres with a core urban population of 1,000 persons or more are considered to be Urban Centres, whilst smaller centres with populations of 200 persons or more and a core urban.

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population and the timing of those changes indicate the combined effects of the multiple pressures on communities. Examining the rates of population change builds an understanding of whether people are leaving from or moving into the towns, the farming areas or both.

The population of an area should be considered in conjunction with the number, scale and diversity of employment opportunities as well as the availability of, and changes to, services such as schools and medical professionals.

A decline in population indicates the loss of human capital (Sherrieb, Norris and Galea 2010). It is important to consider which people are leaving the community. Changes in the age distribution, occupations, education levels and Aboriginal population of the community are likely to affect the community's capacity to adapt to changes or overcome economic and social challenges.

In assessing past changes in population (or indeed economic activities), it is important to consider the potential effects of previous local shocks. When combined with new shocks they might trigger larger systemic effects (Gualdi et al 2015). This may then be reflected in the rate at which the community responds or reacts.

## Why did we look at the age breakdown of the population?

Initial breakdown of the population is based on those aged above and below 45 years of age using 2001, 2006 and 2011 ABS census data at the town scale. Across the rural communities of the basin, those doing reasonably well have a decrease in people under 45 of around 5-8% between 2001 and 2011 and a similar rate of increase for those over 45. Shifts away from these rates of change may indicate the extent of pressures for change in these towns.

A decline in the number of persons aged 45 years and below could indicate families and/

or young professionals leaving the community. This could reduce the demands for certain services such as schools and sport and recreation facilities. Conversely, an increase in the number of persons aged above 45 years could lead to an increase in the size of the health care and social services industry.

An increase in the number of persons aged above 45 years could also represent an increase in the number of retirees in the community and a reduction in the labour force participation rate. As labour force participation is an indicator of human capital in a community, a reduction in the labour force participation rate might reduce the community's capacity to adapt to changes (Sherrieb, Norris and Galea 2010). In some cases, it is important to consider changes in the number of persons aged above 65 years of age.

## Why did we look at the size of the Aboriginal population?

The proportion of the population who identified as Aboriginal in 2011 was calculated using ABS census data at the town scale. This estimate varies considerably across the 21 communities. It helps to understand the changing demands for particular services (and employment), and provides an indication of the social structure and networks within each community.

ABS advises that some people will consider the census question relating to Indigenous status to be personal and sensitive and may choose not to respond to this question. Based on the 2011 ABS census post-enumeration survey, the proportion of persons not counted in the census was 17.2% of the Indigenous population compared with 6.2% of the non-Indigenous population. This implies that the proportion of the population which is Indigenous may in fact be greater than the figures stated in the reports.

Population below 1,000 persons are considered to be Localities. (see <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/ASGS+Fact+Sheets>)

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## Why did we look at educational attainment?

The proportion of the population who completed year 12 was calculated using ABS 2001, 2006 and 2011 census data at the town scale and considered together with the number of persons aged 15 years and over who completed a postgraduate degree, graduate diploma or certificate, bachelor's degree, advanced diploma or diploma, or a certificate.

Education is an indicator of human capital as well as social and economic advantage (Sherrieb, Norris and Galea 2010). A community with a higher level of educational attainment is likely to have a greater capacity to adapt to change than a community with a lower level of attainment. That is, an increase in the level of educational attainment in a community represents an increase in its capacity to adjust to changes (Brooks et al. 2005).

## Why did we look at ABS SEIFA indexes of relative socio-economic advantage and disadvantage?

The community reports include data on the four ABS socio-economic indexes for areas (SEIFA) at the town scale for 2006 and 2011. The four SEIFA indices provide a ranking relative to all other communities in Australia of social and economic advantage - that is people's access to material and social resources, and ability to participate in society.

As indicated in ABS (2011), considerable care is required when utilising the SEIFA data at

different points in time. The decile scores for the four SEIFA indices are only used to indicate the general economic and social condition rankings in 2006 and 2011. A change in relative rank of 2 deciles or more and for several indices is used as an indication there may be changes to the levels of advantage and disadvantage which should be examined in the context of changes in all the other social and economic data.

ABS SEIFA index of education and occupation reflects skills of people in an area - that is, their formal qualifications and skills needed to perform different occupations.

ABS SEIFA index of economic resources reflects the profile of the economic resources of families within the areas - that is, the income and wealth held.

ABS SEIFA index of relative socio-economic advantage/disadvantage and index of relative socio-economic disadvantage reflect a wide range of census information about the economic and social resources of people and households within an area. The factors include income, employment characteristics, educational attainment, housing indicators, access to internet, unemployment and persons needing assistance. The index of relative socio-economic advantage/disadvantage looks at the proportion of people who are advantaged and the proportion who are disadvantaged in an area. The index of relative socio-economic disadvantage only looks at the proportion of people who are disadvantaged.



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The indexes are provided as decile scores of 1 to 10. A decile score of 1 indicates an area is in the 10% most disadvantaged areas in Australia. Disadvantaged areas are likely to have less capacity to adapt than advantaged areas. It is not common for rural communities to have a SEIFA index score above decile 5. A decile of 1 does not imply that an area is twice as disadvantaged as an area in decile 2. It is important to note the indexes provide an average of the people in an area. Even though an area might be in the lowest decile of a SEIFA index, not everyone in that area will be highly disadvantaged.

## What's happening in the economy?

This section identifies changes in industry structure and employment at the area scale and unemployment at the town scale as indicators of change in the economy.

## Why did we look at change in total employment and employment by industry?

The effects of multiple causes of change can be described through the effects on total and sectoral employment. Long-term trends in the number of jobs, types of jobs and their distribution between part and full-time employment provide information about the stresses and level of wellbeing in a community. Some changes have arisen with mechanisation and technologies replacing particular seasonal jobs. Similarly, rapid changes in employment, such as growth in the number and diversity of jobs associated with quickly emerging industries like mining, might have a different effect on the economic (and social) structure of communities.

Work provides an income, as well as psychological fulfilment and a purpose (Fragar et al, 2010). More generally, it is linked to self-esteem and physical and mental health. Where employment decreases in an area, people will tend to leave, acting as a precursor to changes in the population.

While it might be possible to estimate wages income at a regional level as one indicator of economic activity, the focus of this work has been on the number of jobs held in each community. During the consultations, the MDBA was told that changes to employment were a key indication to the communities themselves of the pressures faced. Further information was provided on the importance of retaining experienced staff during dry periods so that it was possible to rapidly support an expansion of economic activity as water availability improved.

Total employment figures are derived from the 2001, 2006 and 2011 ABS census data based on place of usual residence for the community areas. The ABS data covered part-time and full-time jobs (including the number of hours worked) and the wages received. For the 2006 and 2011 census, jobs were separated into 720 industry classifications. The 2001 census data had employment distributed across more than 300 industry classifications. Using the part-time and full-time data, the number of jobs in each community was transferred to full-time equivalents (FTE) ( $\geq 35$  hours per week). The numbers of FTE were then aggregated into four sectors for the purposes of preparing the social and economic reports - that is the agriculture and agriculture supply, irrigated agriculture processing, non-agricultural private and government services sectors. The ABS data does not include a large proportion of the seasonal workers employed in rural communities. Rates of change in jobs per sector across time and the difference in job numbers across the sectors provide information on the stresses applying in each community, how they interact with each other and about the structure of local economies and how they are changing over time. This latter information is particularly relevant to understanding how a change in water may affect the agriculture and non-agriculture sectors in each community.

For example, farm aggregation or technology change is likely to impact the amount of labour required (e.g. reduction in cotton labour demands associated with roundup ready seed, changes in

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irrigation technology and harvesting machinery) in agriculture. That change in employment (where there is no alternative source of employment) will flow on to the demands for goods and services and jobs within the other sectors of local economies. A large or change in employment may result in population decline.

Changes in employment in irrigated agriculture can be attributed to water reform and other sources of change e.g. technology improvements. However, most agricultural enterprises which involve irrigation also have dryland production. These activities, and the primary role of the workers in these enterprises, will vary with the climate and water availability. It is therefore difficult to separate how the farm labour is dedicated to irrigation or non-irrigated activities. For the purposes of profiling the communities in terms of employment, as one indicator of the economic structure, it is appropriate to group all jobs in the agriculture and agriculture supply sector together. This draws together the relationships between farm production and the suppliers of goods and services to that production.

## Why did we look at seasonal employment numbers?

Seasonal employment numbers are influenced by the area irrigated and technology changes. As a consequence, the number of seasonal jobs may vary significantly across time. Seasonal workers can therefore represent a significant proportion of the labour force in the agricultural sectors (used for grape picking and baling cotton for example). Seasonal workers, when required, have generally appeared in large numbers for short periods. This can have significant flow-on effects for local businesses, particularly the retail and accommodation sectors. Based on community and industry consultation, the number of seasonal jobs in each community were estimated by the MDBA. Changes in this number of seasonal workers are included in the modelling work but not within the community report data.

## Why did we look at unemployment figures?

Unemployment figures are based on 2011 ABS census data at the town scale. Unemployment is an indicator of social and economic disadvantage and community resilience (Safford 2004; Sherrieb 2010). The weighted average of unemployment across the 21 communities in 2011 is 6%.

## What's happening in agriculture?

### Why did we look at land use?

Land use data was sourced from ABARES ACLUMP 2016 and analysed at the community scale. Two important pieces of data are provided from the ACLUMP data set – the mix of land uses within a community and the maximum potential area developed for irrigation. The mix of land uses between cropping, grazing and irrigation provides additional information on the farm enterprise – agriculture supply sector with each category having particular demands for goods, services and employees. For more information, see ABARES Guidelines for land use mapping in Australia: principles, procedures and definitions (2011).

The maximum proportion of land developed for irrigated agriculture across the 21 communities ranges between 0% and 14% of the total area. 14% of the area developed for irrigation represents a significant investment. The area of irrigated production in any one year is variable within those communities with large areas of irrigated agriculture production. In some communities, the area of irrigation may not fall to zero in dry conditions due to the availability of groundwater or surface water from a range of sources.

Combining multiple pieces of information helps provide additional information to understand the role of irrigated agriculture in the respective communities. The ratio of the maximum area irrigated to the population provides a comparison of how important irrigated agriculture is to each of the 21 communities.

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## What's happening with water availability?

### Why did we look at irrigation water availability and water recovery?

At the community level, it was necessary to account for the volume of water recovered, type of entitlement recovered, and whether it was through buyback or infrastructure investment. Each community examined has its own particular volume and types of water entitlement. The water may be a mix of surface and groundwater. Entitlement types could include high, medium or general security water from regulated sources, supplementary and unsupplemented water and overland flows and floodplain harvesting licenses.

Data on water entitlements and water recovery through buyback and infrastructure was attributed to individual communities by the MDBA with the assistance of the Department of Agriculture and Water Resources. Water recovery volumes are presented in terms of long term average annual yield equivalents (LTAAYE). The LTAAYE of the water entitlements is based on the long-term diversion limit equivalent factors agreed to by the Murray-Darling Basin Ministerial Council in November 2011. Data on the water recovery includes the year in which the water was recovered.

When looking at Commonwealth Basin Plan water reform, it is important to keep in mind that this may be additional to, and subsequent to, previous water reform such as changes to state water sharing plans.

## What did we learn from the narratives?

The information contained in the social and economic condition reports is further contextualised by the experiences, views and perceptions of community members. They provided their insights about changes in their communities and the current challenges they face. More specifically, they indicated the changes which they felt were most important to them and their community, and described what they saw as the effects arising from those changes.

This information helped the MDBA to understand why particular demographic and economic changes might be occurring, what impacts they may have on different parts of the community, and how communities are affected by, and responding to, the multiple drivers of change they face.

Community members provided their insights into the impact of cumulative policy reforms and other changes in regional communities and agricultural sectors enabling a more nuanced understanding of the cumulative impacts being felt (see Schirmer 2011).

Most importantly, the narratives helped the MDBA develop the community-level models of employment and to interpret the results from that modelling.

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