

Independent Social Impact Assessment

**Proposed Castle Hope Dam -
Calliope River, and Awoonga Dam
upgrade, Queensland**

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Central Queensland
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Independent Social Impact Assessment

Proposed Castle Hope Dam - Calliope River, and Awoonga Dam Upgrade, Queensland

Prepared for

The Calliope Shire Rate and Taxpayers Association, Queensland

Prepared by

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PREFACE

The Gladstone Area Water Board (GAWB) as part of its preferred strategy for water supply augmentation to supply predicted industrial demands, has proposed a number of developments in the Gladstone-Calliope Region, Queensland. The development options involve the upgrading of the existing Awoonga Dam facility on the Boyne River and a proposal to construct a new dam on the Calliope River at Castle Hope. The proposals were released in June 1996 as part of a Water Supply Source Options study for the GAWB by the Department of Natural Resources, Queensland.

Following the release of these proposals local communities in the region expressed their concerns to the GAWB and the Department of the Premier and Cabinet, Queensland Government, regarding the extent to which the proponent would address social impacts and appropriate community participation in the development process. Subsequently, the Premier's Department invited Dr Salim Momtaz to conduct a study to assess the social impacts that are likely to follow from these proposed developments. This study was conducted between March – December 1997 by Dr Salim Momtaz, Lecturer in Geography and Environmental Studies, Central Queensland University and Dr Stewart Lockie, Lecturer in Sociology, Central Queensland University, with Mr. Bruce Taylor as research assistant.

ACKNOWLEDGEMENTS

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Executive Summary

Independent Social Impact Assessment, Proposed Awoonga Dam upgrade and Castle Hope Dam on the Calliope River.

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Background to proposals and Study

The Gladstone Area Water Board as part of its preferred strategy for water supply augmentation to supply predicted industrial demands, has proposed a number of developments in the Gladstone-Calliope Region. The development options involve the upgrading of the existing Awoonga Dam facility on the Boyne River and a proposal to construct a new dam on the Calliope River at Castle Hope. The proposals were released in June 1996 as part of a *Water Supply Source Options* study for the Gladstone Area Water Board prepared by the Department of Natural Resources, Queensland.

The development proposals assessed in this Independent Social Impact Assessment are:

1. Development of a new dam at the Castle Hope Site on the Calliope River, located 33.0 kilometers from the Calliope River's most downstream point (AMTD 33.0 km). The optimum proposed storage level when full would be at an elevation of 35m (FSL EL 35.0), with a storage capacity of 390 000 megalitres producing an annual yield of 45 100 megalitres. An associated delivery system is also proposed. The first stage of this new source and related delivery works will be required by around 2000-01.
2. Raising of the existing Awoonga Dam, possibly in two stages, when future water demand justifies further water source development works. A raising of the existing Awoonga Dam - currently with a full storage level of 30.0 metres elevation and a storage capacity of 270 000 megalitres - to the optimum proposed storage level of 53.5 metres elevation (FSL EL 53.5m). This would produce a storage capacity of 2 000 000 megalitres and an annual yield of 149 700 megalitres.

This Independent Social Impact Assessment conducted by the Rural Social and Economic Research Centre, Central Queensland University, was commissioned by the Calliope Shire Rate and Taxpayers Association, Queensland and funded by the Department of the Premier and Cabinet, Queensland Government, following concerns raised in the communities local to the development proposals. These concerns regarded the extent to which the proponent would address social impacts and appropriate community participation in the development process. This study is independent of the proponent and any studies conducted by or on behalf of the Gladstone Area Water Board. The scope of the study and Terms of Reference were determined through negotiation with the Department of Premier and Cabinet, the Community Reference Group - the Calliope Shire Rate and Taxpayers Association - and the Rural Social and Economic Research Centre study team.

The **principal objectives of this study** are to identify social issues and potential social impacts relevant to the proposed water infrastructure developments of the Gladstone Area Water Board on the communities of the Gladstone-Calliope region.

Regional and local community profiles were constructed to provide accurate information through which identified social impacts and issues were assessed. The major forms of community consultation for the assessment were personal interviews with rural landholders adjacent to or within the proposed inundation areas of the proposals, and the distribution of a mail survey throughout Calliope Shire. The study similarly sought contributions from regional industry, community and producer groups, state government agencies and local government.

Social Impacts of Previous Development

The benefits of previous water infrastructure development (Awoonga Dam) to regional industry, economic growth and service provision in Gladstone and the Boyne -Tannum area is recognised within the communities of Calliope Shire. However the perception of previous water supply development, in regards to the impact on local rural communities is generally negative. It is believed that the construction and subsequent upgrades of the Awoonga Dam has contributed to the decline of local population, service provision, productivity (having negatively impacted on rural producers and the fishing communities), recreational amenity and employment opportunities for the local communities of the Boyne Valley. It is also perceived as contributing to the degradation of the local natural environment and generating water use and access conflict.

Social Impacts of Current Proposals

Awoonga Upgrade Proposal – existing Awoonga Dam, Boyne River.

The major social issues and impacts associated with the proposed upgrade of the existing Awoonga Dam from 30.0 metres elevation to proposed storage level of 53.5 metres elevation include the following:

1. **Access.** Reduced access to properties and general local areas, longer travel distances and prolonged flooding of local roads. The Gladstone–Monto Road being ‘cut’ would result in increased operating costs and reduced access to community services in urban centres.
2. **Loss of property through inundation.** The ‘most productive and valuable’ land inundated, resumption of property and dwellings, partial inundation effecting viability, loss of farm infrastructure. Some 18% or 48 respondents, and several interviewed landholders, indicated they would loose property through inundation. Viability of remaining properties also affected.
3. **Uncertainty.** The likelihood, timing and extent of the proposal has contributed to long-term uncertainty for residents of the Boyne Valley, causing frustration and indecision with property management and planning. Residents are unsure over the future condition of local communities, roads and the possibility of increased flooding.
4. **Local community and economic issues.** Positive potential impacts include improved water access/supply for irrigation and domestic needs, an improved local economy and employment generation in construction and service sectors. Increases in rates and water costs, declining viability and production levels of local properties and the loss of local heritage values have been identified as potential negative impacts.
5. **Community social issues.** Social issues relating to family and personal circumstances were raised widely during interviews. Proposals were accelerating the rate of social change in the communities of the Boyne Valley. Effects of recent resumption include diminished opportunities for social networks or support.
6. **Recreation and Tourism.** Informal and natural recreation areas in rural districts would be lost to inundation while recreation facilities may be provided at upgraded dam site. Potential growth in recreation and tourism potential of Boyne Valley may improve local business opportunities. Decline in recreational fishing likely unless fish ladder construction is adopted.
7. **Equity issues.** Inequity of water costs and increase in rates will continue to adversely affect the aged and other low income earners in the community. Some residents stated that they believed regional wealth generated by the industrial growth from the proposals would not translate into investment in local social, support and education services and infrastructure.
8. **Regional community and economic issues.** Gladstone industry would benefit from the improved water supply. The safety of the upgrade is in doubt. Potential loss of regional mineral resources through inundation. Perceptions within the community of the viability of commercial fisheries affected as well as potential regional environmental degradation.

Castle Hope Dam Proposal – Calliope River

The potential social impacts of the proposed dam development on the Calliope River at Castle Hope to an elevation of 35.0 metres (FSL EL 35.0), were identified as:

1. **Access and inundation issues** - loss of access at local and property scales, increased freight costs, access to stock and migration of stock would also be affected. Major local access problems associated with the inundation and relocation of the Bruce and Dawson Highways impacting on the general community.
2. **Land, infrastructure and inundation** –inundation of land considered the districts most valuable or productive. Proposed dam will impede the draining of natural floodwater, potentially damaging pastures. Construction of new yards and fencing associated with stock access to the water body and relocation of property boundaries would present a major financial cost to producers. Perceived lack of suitable land available in the district for relocation. Questions of ownership of property within the proposed buffer zone. Inundation of the major properties which represent cultural and production resources to community.
3. **Uncertainty** - Residents generally expressed the desire for a decision from the Gladstone Area Water Board to allow property planning to continue and financial decisions to be made. It was also stated that the general uncertainty generated by the proposal has translated into the broader local communities and was having an adverse impact. This involved uncertainty over proposed water levels, the extent of property inundation and the possibility of relocation.
4. **Local community and economic issues** - increased water supply for property, irrigation, stock access or domestic use, prolonging present employment or the generation of employment in construction phase were perceived as positive impacts. The overuse of remaining productive farm land, loss of local jobs, flow-on effects of reduced local population on local business are negative effects of proposal.
5. **Personal social issues** - members of the Calliope Valley communities would be adversely affected through disruption or loss of lifestyle, loss of friends and social networks through relocation and the loss of cultural heritage, old homes and family properties.
6. **Community social issues – structure, networks and cohesion.** Strong concern amongst residents that the inundation area consists largely of older members of the local communities who fulfil roles as local librarians/historians, church elders, leaders and members of rural groups. Disruption of cooperative relationships between adjacent landholders may result. Impacts on social stability, values and attitudes such as the rural sector ethic and contribution to the community.
7. **Recreation and tourism** - loss of recreational amenity and value on the Calliope River (swimming holes, camping areas, fishing spots), loss of tourism and eco-tourism potential of the Calliope River in its natural state. Belief that proposal may detract from existing recreational and tourist opportunities downstream of the dam site.
8. **Regional community and economic issues.** Regional environmental degradation including the destruction of fish habitat, siltation, restricted flows and increased pollution with regional industrial growth was a commonly held concern. The potential loss of the Calliope River as a community environmental resource was also evident. The proposal will potentially impact on recreational and commercial fishing, related service industries and changes in catchment land uses. The communities of the Calliope Valley perceive links between water supply, generation of industry and regional employment. Changes in traditional regional economic activities were also identified as a potential impact.

Study Recommendations

Recommendations arising from this assessment are summarised below. These are presented in context and in full in Section 7.0.

1. Prior to construction of either proposals the proponent should establish water access agreements with landholders and make this and other related policy publicly known.
2. The proponent investigates the development of 'local' informal recreation sites in consultation with the rural communities adjacent to the proposals.
3. The community is consulted during the proponents' IAS regarding the type, extent and acceptability of local environmental change to their watercourses associated with the proposed developments.
4. The construction workforce and supporting service providers be sourced where possible from the communities adjacent to the development locations.
5. In order to assess the real extent of the proposals on the local economy and employment characteristics, direct and indirect impacts on local jobs and income must be incorporated into the final benefit-cost analysis by the proponent.
6. As a component of any forthcoming IAS study conducted by the proponent, a European cultural heritage survey should be undertaken involving local historical groups.
7. Proponent must ensure that marginalised groups are included in the consultation process.
8. The consultation process must be physically accessible to those communities involved.
9. The proponent needs to engage in individual 'on property' consultation with potentially affected landholders in or adjacent to inundation areas.
10. The means by which notification and consultation is undertaken by the proponent must improve on its current status in the community.
11. The proponent should seek to incorporate knowledge of local residents.
12. The Community Reference Group and other groups in the region need to be aware of the desire present in the community for participation in the development proposal process.
13. The commercial fishing industry and supporting industries represent a major organised stakeholder in the proposed developments and should be recognised and referred to as such.
14. The proponent undertake a holistic benefit-cost analysis of impacts such as the loss of income to the commercial fishing industry and associated service industries.
15. As a component of the proponent's IAS, a register of suitable properties or land in the region, available for relocation be compiled.

16. Increased community awareness of flood mitigation and general safety measures during and following construction.
17. Calliope Shire Council appoint a rural support worker or community resource officer, located in the communities affected by the proposals, contributing to reducing negative social impacts of the proposals.
18. Strong consideration must be given to the implications of multiple regional development projects on the communities of the region regarding the potential cumulative social impacts of the proposals and projects.

Section 1.0

Introduction

1.1 Proposed Water Infrastructure Developments in the Gladstone-Calliope Region

Proponent

The main proponent of the proposed water infrastructure developments in the Gladstone-Calliope region is the Gladstone Area Water Board (GAWB). The GAWB is a Statutory Authority that was originally established as a Project Board in 1973 and as a body corporate under the provision of the *Gladstone Area Water Board Act 1984*. The Board's Operational Area comprises the Local Authority areas of Calliope Shire and Gladstone City. The purpose of the Board is to supply water in bulk to major consumers in the Gladstone Region (GAWB, 1996a, p.4).

Proposals

The proposals with which this study is concerned lie within the Gladstone Area Water Board's Infrastructure Provision Subprogram, a subprogram which ensures that water related infrastructure required to meet the water demands of present and future consumers is in place as required. The goals of the subprogram are; to provide a water supply system in an efficient, effective and cost competitive manner, and, provide appropriate recreation facilities.

In June 1996 the GAWB received a report, *Water Supply Source Options* for the Gladstone-Calliope region produced by the Department of Natural Resources. Following consideration of the report, the Board has adopted a **preferred water supply development strategy** for the region. The preferred strategy is as follows:

1. Upgrade the delivery system from Awoonga Dam (Boyne River) to Gladstone and the Yarwun Industrial Area to make full use of the yield from that source. This upgrade is planned for completion by the end of 1998.
2. Development of a new dam at the Castle Hope Site on the Calliope River, located 33.0 kilometers from the Calliope River's most downstream point (AMTD 33.0 km). The optimum proposed storage level when full would be at an elevation of 35m (FSL EL 35.0), with a storage capacity of 390 000 megalitres producing an annual yield of 45 100 megalitres. An associated delivery system is also proposed. The first stage of this new source and related delivery works will be required by around 2000-01.
3. Raising of the existing Awoonga Dam, possibly in two stages, when future water demand justifies further water source development works.

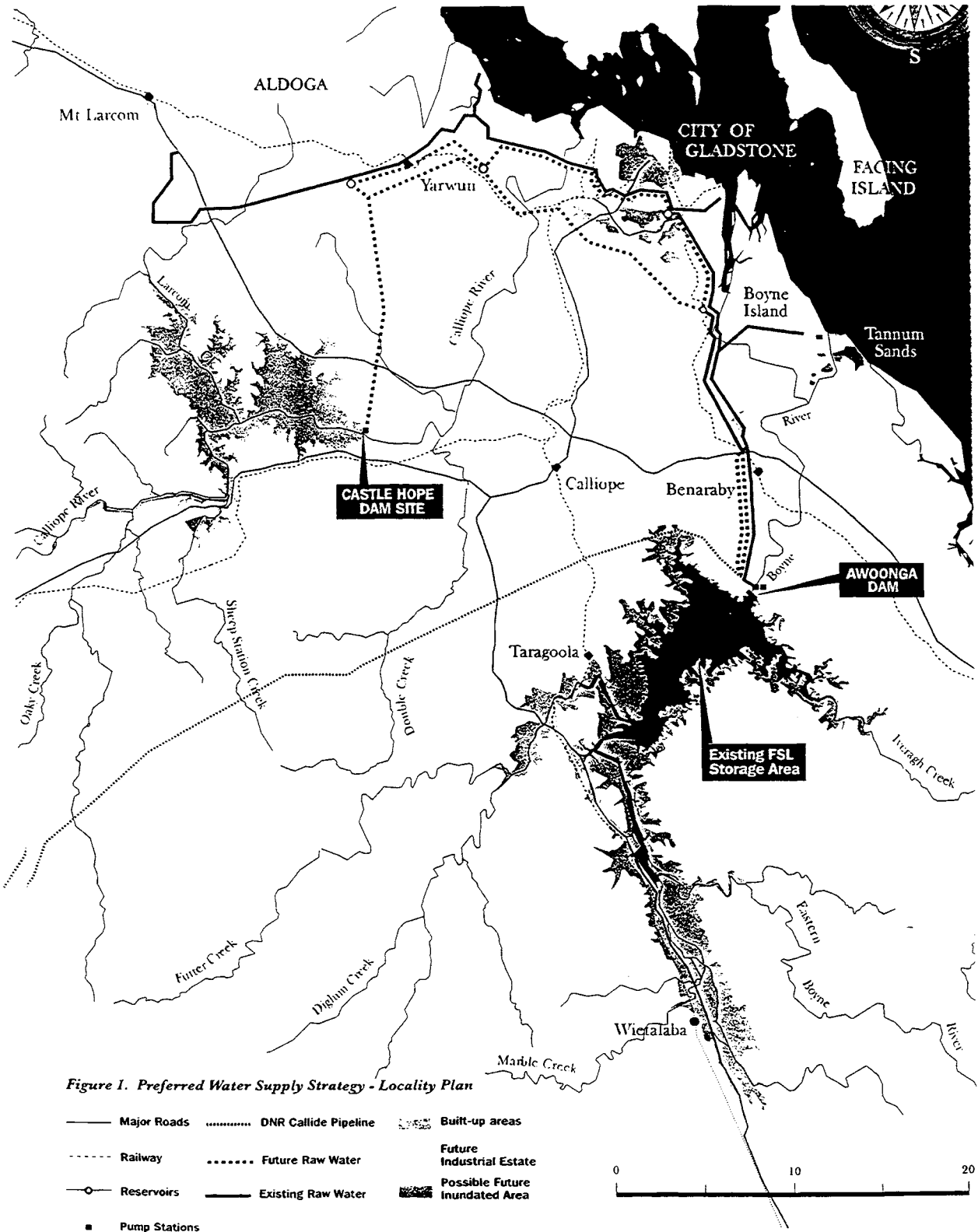
The existing Awoonga Dam is located at 22.7 kilometres from the Boyne River's most downstream point (AMTD 22.7 km) with a full storage level of 30 metres elevation and a

storage capacity of 270 000 megalitres. The Awoonga Dam was completed to its current level in 1984.

A raising of the existing Awoonga Dam to the optimum proposed storage level of 53.5 metres elevation (FSL EL 53.5m) would produce a storage capacity of 2 000 000 megalitres and an annual yield of 149 700 megalitres. Other options for raising include an intermediate raising to 43.5 metres elevation and a minor spillway raising (including a rubber dam) of 3.2 metres above the current storage level.

It is the second and third of the above development proposals, construction of a dam at Castle Hope on the Calliope River to FSL EL 35.0 metres, and the raising of the existing Awoonga High Dam to FSL EL 53.5 metres, which are the primary concern and focus in this social impact assessment. The proposed developments are displayed in Figure 1.

Figure 1. Location and regional setting of Gladstone Area Water Board proposed water infrastructure developments – Castle Hope Dam site on the Calliope River and the existing Awoonga Dam on the Boyne River and proposed upgrade.



MAP BASE DATA COURTESY DEPT. OF NATURAL RESOURCES, RESOURCE SCIENCES

Alternatives to the two proposed developments outlined above, explored by the Gladstone Area Water Board as part of the *Water Supply Source Options Study*, included two other potential dam sites in the region and alternative water supply sources.

The other potential dam sites identified were Baffle Creek (AMTD 56.6km) and Raglan Creek (AMTD 65.7km). The Department of Natural Resources concluded that the Baffle Creek storage option was not suitable due to its high economic cost and the environmental values associated with the site. Raglan Creek was also determined not suitable due to its high economic cost, small yield, and because of issues relating to water quality.

Alternative water supply sources considered by the Department of Natural Resources and other consultants during recent regional water resource planning studies included desalination of sea water, use of treated wastewater, greywater and rainwater tanks. Desalination was found to be the only alternative supply source option capable of meeting large additional water supply demands in the Gladstone Region however provision of this water source to major consumers was considered too costly in comparison with conventional methods of supply.

The present yield from the existing Awoonga Dam meets current regional demand, of which industry accounts for 80% of total demand. Projected water supply demands for the region used by the Gladstone Area Water Board are the basis for increased infrastructure provision in the form of the proposed Castle Hope dam on the Calliope River and upgrading the existing Awoonga Dam storage on the Boyne River. These projected supply demands are based on the expectation of new industrial development and future expansion of existing industries in the Gladstone Region.

1.2 Study Objectives and Terms of Reference

The principal objectives of this study are to identify social issues and potential social impacts relevant to the proposed water infrastructure developments of the Gladstone Area Water Board on the communities of the Gladstone-Calliope region. This assessment aims to contribute to providing a framework for enhanced planning and decision making processes in order to manage for minimisation of negative and enhancement of positive social impacts relating to the proposed developments.

The terms of reference for this study were developed through consultation between the Calliope Shire Rate and Taxpayers Association (CSRTA), Department of Premier and Cabinet and the Rural Social and Economic Research Centre study team and represent the broad study framework.

The **Terms of Reference (TOR)** for this study are as follows:

- conduct an independent social impact assessment of the proposed Castle Hope Dam development on the Calliope River and raising the existing Awoonga Dam on the Boyne River, Gladstone.
- evaluate social impacts of earlier development projects in the region, particularly the construction of Awoonga Dam.
- identify measurable social impacts of development proposals on factors of population change and effects on employment opportunities within the communities.
- identify qualitative impacts such as effects on social relationships, impacts on psychological attitudes and community cohesion.

Study Scope and the involvement of RSERC

It is important to note that this study has arisen largely due to several concerns among some members of local communities. These concerns regard the extent to which social impacts would be addressed by the proponent, that they – the community members - would be ignored in impact assessment studies and development planning and be offered only limited input in the advanced stages of planning. This study is an independent assessment conducted primarily to address these concerns of local community members.

It is also important to note that this study, undertaken by the Rural Social and Economic Research Centre, is not the impact assessment (IAS) required of the Gladstone Area Water Board by law, but is additional to any studies conducted by, or on behalf of the Gladstone Area Water Board.

The scope of the study therefore is largely limited to the local communities within or adjacent to the proposed construction and inundation areas of the developments. These communities will be referred to as the *affected* communities. The study scope is implicit in the study methodology agreed by Department of Premier and Cabinet, the Rural Social and Economic Research Centre, and the Community Reference Group.

It should be stated that the scope of this assessment is too limited to address all potential social and socio-economic impacts of the proposals at a local or regional scale and for all affected groups. It is beyond both the scope and resources of this assessment to include groups such as traditional owners of the Calliope-Boyne areas and the residents of the City of Gladstone (the study population is defined in Section 2.0). The study team however has also sought input from regional communities, industry and members of local government and the relevant State Government agencies and Departments as stakeholders in the proposed developments.

This assessment should be used to inform planning and further impact assessment conducted by the proponent, the Gladstone Area Water Board, or other agencies.

1.3 Utility of Social Impact Assessment

Definition of Social Impact Assessment

For the purposes of this study:

Social Impact Assessment can be defined as the process of assessing or estimating in advance the social consequences that are likely to follow from specific policy actions or project development ... social impacts include all social and cultural consequences of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society. Cultural impacts involve changes to the norms, values and beliefs of individuals that guide and rationalise their cognition of themselves and their society (Burge & Vanclay, 1995, p.32)

The purpose of conducting Social Impact Assessment is not simply to provide an account of public opinion. As stated in Vanclay & Bronstein (1995), public support for, or opposition to, a proposal may simply be a matter of timing, the role of the media and public relations exercises by the proponent. For this reason the primary role of SIA involving community

consultation, is not an opinion survey of the resident population, but to identify and assess the extent of impacts associated with the proposals.

As part of the *Water Supply Source Options* study conducted by the Department of Natural Resources, Qld., on behalf of GAWB a preliminary report, "Environmental Appraisal of four potential dam sites for the Gladstone Region", was produced. The study identifies the probability of impacts of the proposed developments, and their relative magnitude, on the natural, social and cultural environments of the areas affected. The study states that the information gathered is not necessarily comprehensive and that conclusions are indicative rather than definitive, and that difficulty was experienced in weighting social and environmental values and their relative impacts (GAWB, 1996b).

The impacts identified within the report include, for the Awoonga Dam raising:

- relocation of major sections of the Gladstone-Monto Road (up to 36 km) and Boyne Valley Railway (up to 27 km) and related infrastructure, and relocation of number of other minor roads in the Boyne Valley
- moderate to high impact on land use and a moderate impact upon the natural and cultural environments
- Awoonga proposal would have the highest social impact of the four proposals, outlined in the *Water Supply Source Options* study, owing to the greater number of people directly affected by inundation.

And for the proposed Castle Hope Dam:

- relocations of sections of the Bruce Highway, Dawson Highway and Mt Alma Road
- relocation of a short section of the State Gas Pipeline and dual high voltage transmission lines
- concern over impacts on the riparian and fish habitat environments of the Calliope River
- moderate impact on social and cultural environment at the proposed Castle Hope site

The *Water Supply Source Options* study identifies that further detailed research into social and other impacts associated with the development proposals will be significant in determining the acceptability of a particular development. Similarly, further research will also be integral in considering the optimum level of development at the sites (GAWB, 1996b p.12), which have now been identified as Awoonga Dam and environs and the proposed Castle Hope Dam site on the Calliope River.

Role of the Community Reference Group

The Calliope Shire Rate and Taxpayers' Association (CSRTA) has fulfilled the role of the main community reference group for the study. The CSRTA has been instrumental in garnering support from the Department of the Premier and Cabinet for the project and has aided in defining the objectives of the project. This cooperative relationship has been maintained throughout the project. However, it is important to note that community consultation was in no way limited to the reference group; nor has the reference group had any direct control over project findings or reporting; and nor has the reference group supervised the research.

The CSRTA perceives its role as providing a forum for local community members with the goal of facilitating community awareness in local development issues and participation in the

development process for the mutual benefit of community members", whilst maintaining impartiality with respect to proposed developments. In this context the CSRTA has been well placed in its role as the community reference group for this assessment of the social impacts of the proposed Castle Hope Dam and Awoonga Dam upgrade.

Legislative requirements and operational guidelines for Social Impact Assessment

In the Commonwealth *Environment Protection (Impact of Proposals) Act 1974* a comprehensive requirement exists for the examination of the social impacts of development proposals, including socio-economic factors, community aspects, heritage aspects and controversy or concern over environmental impacts expressed within the community (BBC 1994pp15-18). The legislative basis for impact assessment in Queensland is provided mainly within the *Local Government (Planning and Environment) Act 1990-1* and the *State Development and Public Works Organisation Act 1971-81*.

Proper consideration of social issues in impact assessment processes is evident from the inclusion of social aspects in the definitions of 'environment' in addition to physical and ecological aspects, within the relevant legislation. The *State Development and Public Works Organisation Act 1971-81*, for example, includes in its definition of the 'environment'...

those qualities and characteristics of locations, places and areas, however large or small, which contribute to their...interest, harmony, amenity, and sense of community, and, social, economic, aesthetic and cultural conditions

The Department of Families, Youth and Community Care has served as the lead referral agency in an advisory role for this assessment. The Social Impact Assessment Unit (SIAU) of the Department of Families, Youth and Community Care has contributed to the formulation of the study framework and advised on appropriate process.

Section 1.0 Review

This section has outlined the background of the study environment by introducing the proponent - the Gladstone Area Water Board, the proposals themselves, the study objectives and Terms of Reference. This section has also outlined the involvement of the Rural Social and Economic Research Centre as the study team, the role of the Community Reference Group and the legislation relevant to the study as a Social Impact Assessment.

The following section, Section 2.0 details the processes and methods used by the study team to conduct the assessment, particularly focusing on the methods employed for community consultation and information gathering.

Section 2.0

Study Processes & Methods

2.1 Method

Methodologies used in Social Impact Assessment are relatively standardised and well represented in the impact assessment literature (Vancly & Bronstein, 1995; Burdge, 1995; Finsterbusch, Llewellyn & Wolf, 1983; SIAU, 1997 and others). The basic outline of the assessment process in common use consists of several steps:

1. *Scoping* – issues and affected interest groups are identified and study boundaries defined;
2. *Profiling* – description of existing social conditions, ‘baseline’ data established for identified impacts;
3. *Prediction* – social impacts or changes that may result from the proposal;
4. *Assessment* – predicted impacts / changes are assessed in terms of their magnitude and significance;
5. *Evaluation* – alternatives to the proposal are evaluated;
6. *Mitigation, monitoring and review* – identification of potential actions or policy directions which may be used to minimise the negative impacts (or enhance positive impacts) of the proposal on the community; and
7. *Recommendation* – recommendations are developed for various impact management measures as conditions for approval of the project.

After Beckwith, (1990), in, SIAU (1997).

In developing an appropriate process for this study the structure of the above process was used as broad logical framework for this assessment. However due to this study’s independent nature, the process has been adapted where necessary - despite the broader structure of the above process remaining in tact. Below is an outline of the process and specific methods employed during the course of undertaking this study:

1. Scoping

Previous and current issues within the community were identified through preliminary consultation undertaken with the community reference group, individual residents, community groups, representatives of industry and the proponent. A register of stakeholders was compiled. Information on the scale, time frame and nature of the proposals was collected. Consultation with the Department of Families Youth and Community Care’s *Social Impact Assessment Unit* as referral agency was established. Terms of Reference and study objectives were negotiated and set. Previous relevant IAS studies in the region as well as concurrent progress reports and SIA’s of other regional large-scale water infrastructure development were collated and reviewed.

2. Profiling

A demographic and social profile of the affected communities was constructed using shire-based (regional) and local (collection districts) statistical data. Community and

Shire profile information including characteristics, facilities and resources (education, recreation, service provision) were sourced from relevant Local government and State Department data sets. Information on other characteristics of the affected communities such as community ‘values’ and aspects of ‘quality of life’ were collated during initial travel within the shire and consultation with local landholders and community groups.

3. Prediction

Data gathered in scoping / profiling stages, including long term trend data and experiences of community members, was assessed in context of previous development within community - in particular the initial construction and subsequent upgrades of Awoonga Dam.

Likely impacts of current proposals were predicted based on community identified impacts of previous development, and, quantified trends in population and community structure during construction and upgrade phases of Awoonga Dam. A review of comparable project development within the region (previous and current) and the impacts on the communities associated with those projects also contributed to the prediction of impacts with the Castle Hope Dam and Awoonga upgrade proposals.

4. Assessment and Evaluation

Assessment and evaluation of predicted impacts incorporating an analysis of impact likelihood and magnitude was conducted. Information gathered during community consultation was integral in this stage of the assessment.

Alternative options were identified and were evaluated in terms of their preference to the community, viability, and comparative impacts in relation to the proposals. With community consultation the evaluation of perceived importance of impacts and perceived risk associated with development proposals was established. An analysis of beneficial and detrimental impacts of proposals was also conducted.

5. Mitigation, monitoring and review

Community identified mitigation options and enhancement of opportunities arising from development impacts were assessed in terms of their appropriateness, equity, viability and likelihood of community support and acceptability.

Although it was not the role of this independent assessment to initiate or conduct post project monitoring, specific social indicators, which have reflected previous social change in the affected communities, have been identified through this study.

6. Recommendations

It was not within the scope of this study to produce formal recommendations or conditions of approval for the proponent. The study team did however identify major issues and concerns that require detailed investigation during the proponent’s own impact assessment studies. The findings of this study are addressed in the context of the Terms of Reference in the final section of this report, Section 7.0, *Review and Recommendations*.

2.2 Community consultation process and information gathering

The 'active' (SIAU, 1997) form of involvement which characterised the approach of this study is evident in that consultation that was carried out with the various parties and communities affected, at the initial conceptual stages of the proposal.

Public meetings and forums

The Rural Social and Economic Research Centre (RSERC) study team attended a number of public meetings over the duration of the study. In attending these meetings the study team were able to accomplish the following:

- introduction of the study team
- increased community awareness of the study objectives and proposed timeframes
- provided opportunities for the study team to become familiar with the local community members and main issues for the community generally and in relation to the proposals
- served to update the community as to the progress of the project and provided an opportunity for ongoing feedback to the study team from the community

The public meetings attended by members of the RSERC study team between May 1997 and November 1997 include:

- **5th May, 1997** - Stewart Lockie attended a public meeting in Calliope. Initial consultation with Reference Group, the Calliope Shire Rate & Taxpayers Association, and other members of the community including residents of the area, regional industry and the proponent. Introduction to RSERC and SIA process. General discussion of principal regional stakeholders.
- **7th July, 1997** - Salim Momtaz and Stewart Lockie attended Calliope Shire Rate & Taxpayers Association meeting. Discussions were had with several rural landholders, and Frank McKee, president of the Builyan-Many Peaks Community Development Association.
- **1st September, 1997** - Salim Momtaz and Bruce Taylor attended Calliope Shire Rate & Taxpayers Association meeting, Calliope. Progress and intended plans were reported by the study team. Questions from the local community were answered.
- **10th November, 1997** - Salim Momtaz and Bruce Taylor attended Calliope Shire Rate & Taxpayers Association meeting, Calliope.

Other meetings within the region during the course of the study attended by members of the study team include:

- **6th May, 1997** - Stewart Lockie met with Mr Geoff Bulpit, CEO of the Gladstone Area Water Board. Discussed the Board's progress to date on the proposals and ongoing processes with respect to the developments.
- **7th October, 1997** - Salim Momtaz and Stewart Lockie met with the Mayors of Gladstone City Council and Calliope Shire Council, George Creed and Peter Coronas.
- **12th October, 1997** - Gladstone Region Environmental Forum meeting, Gladstone City Council offices, was attended by Bruce Taylor.
- **18th February, 1998** - meeting with Office of Aboriginal and Torres Strait Islander Affairs, Indigenous Social Planning.

Public meetings and forums provide valuable framework for some aspects of community involvement in the impact assessment process, largely the dissemination of information. However public forums rarely provide an appropriate medium for gathering a thorough cross-section of attitudes which are representative of the various groups within a given community. This is largely due to only certain groups within the community attending such meetings with

only some individuals representing some of these groups actively participating (Vancley & Bronstein, 1995; DPI, 1994; Finsterbusch et al. 1983)

In response to this and other considerations, a detailed community consultation plan was developed by the study team which involved several methods of consultation; public meetings and forums, a series of interviews with landholders and the use of a mail survey.

This initial contact with, and involvement of the community and other stakeholders at local public meetings served as a form of preliminary consultation. This enabled the study team to direct the focus of the following consultation process through the initial identification of major issue areas.

Interviews with landholders

As one of the main components of the consultation process, interviews were conducted with residents from the Boyne and Calliope Valleys and environs. The interviews were conducted between the 14th of August 1997 and the 12th September 1997. The information gathered therefore represents respondents' concerns, attitudes, knowledge and experiences up to and including the time of the interviews.

The interviews were conducted through prior arrangement with the landholder via telephone contact generally one week prior to the interview date. The purpose of the initial telephone contact was to introduce the interviewer and the study to the landholder, gain permission to access their property and set an appropriate date and time for the interview.

The interviews were conducted face to face with individual landholders, with durations ranging from around one hour to up to four hours in a number of cases. Visits to landholders' properties also consisted in some cases of tours of their property, township and local environs to identify locations that were particularly significant to the landholder in relation to the proposed developments.

Some twenty-four individual interviews were conducted with residents from various locations throughout the area including: residents adjacent to the Dawson Highway and Moura Short Railway; residents located in the proposed Castle Hope inundation area; located downstream of the proposed Castle Hope dam site; in the proposed upgraded Awoonga Dam inundation area; and residents located in the Nagoorin-Many Peaks section of the Boyne Valley.

Prior to the commencement of the interview itself, the respondent was informed that:

1. The study was independent and being conducted on behalf of the Department of the Premier and Cabinet and was not associated with, nor influenced by the Gladstone Area Water Board as the proponent
2. Information provided was confidential.
3. There was no compulsion to answer questions the respondent did not wish to.

Interviews were designed to gather two main types of information:

1. Social and demographic profiles of the respondents, and,
2. Respondents' experiences, attitudes, perceptions and concerns regarding:
 - Major issues within their region and district
 - Previous water infrastructure development in the region
 - Probability of present water infrastructure project fulfillment and validity of projected water demands for the region

- Effects of proposed water infrastructure development on their community and personal circumstances, and,
- Viable alternatives to the proposals and opportunities for mitigation of the effects of the proposal

The interview protocol followed, consisted mainly of open-ended questions which were asked of the respondent by the interviewer. These prepared questions served to cover the material required by the interviewer yet also sought to initiate open discussion regarding the impacts of proposals. This ensured the respondent was not limited in their reply to the questions. An opportunity was also provided at the end of the interview for the respondent to relay any further information they believed was relevant and not covered during the course of the interview.

The purpose of conducting community surveys as a component of the SIA is not simply to provide an account of public opinion. As stated in Vanclay & Bronstein (1995), public support for, or opposition to, a proposal may simply be a matter of timing, the role of the media and public relations exercises by the proponent. For this reason the primary role of the consultation being undertaken is not an opinion survey of the resident population, but to identify and assess the extent of impacts associated with the proposals.

It is relevant to note that the administration of a survey within a community has its own impacts. Finsterbusch et al. (1983) state that social impact assessment surveys in particular may cause some individuals to form or clarify their opinions on aspects of the proposal they had not done so prior to the survey. This inevitably has implications for this study and for further impact assessment work to be conducted by the proponent at a later stage.

Mail Survey (*Community Survey*)

Survey content

The mail survey - referred to hereafter as the **Community Survey** or **survey** - was refined slightly both in structure and content from the approach used for interview purposes. This refinement resulted from a better understanding of the major issues associated with the proposals gained during the previous interview stage of consultation.

The survey maintained the largely open-ended question content of the interviews. The introduction of a series of closed or scaled questions which allowed the respondent to indicate the strength of agreement or disagreement with a given statement was also used to evaluate the degree of consensus or conflict amongst the population on certain issues. The *Community Survey* distributed within Calliope Shire by mail is displayed in Appendix C.

Sample framework

The purpose of the sample framework used in the administration of the mail survey was to firstly, define the population of residents most directly affected by the proposals, and secondly, allow provision for the inclusion of that population into the sample.

It was determined that the population most likely to be affected consisted of individuals, groups or industries located in areas directly affected by proposed inundation levels; relocation of existing transport or other infrastructure; those in the adjacent townships and in the township environs, and those residents in the main service provision centre for that hinterland – the town of Calliope. Essentially then, the sample framework consisted of the

Boyne and Calliope Valleys and areas on the eastern fringe of those valleys including communities downstream of the proposed sites.

Utilising the Geographical Information System of Calliope Shire Council, a geographical boundary was constructed which encompassed the above communities as the sample population for the mail survey (see Appendix B). A list of names and addresses of ratepayers within this boundary were obtained using the Calliope Shire Council geographical information system.

Some 1120 mail surveys were distributed to residents within this area. To counter the possible problems arising from only designated ratepayers receiving a mail survey, recipients were asked at the outset of the survey to request further surveys for other members of the household, neighbours or friends who wished to contribute to the study and who had not received one. The recipient was asked to complete and return the survey within a 1-2 week period however surveys received up until the compilation of this report were incorporated, effectively providing a six week response period. During this period several recipients contacted study team members for clarification of questions or requesting additional information which was sent if resources allowed.

Industry, government and producer group survey

The identification of industries, government agencies and producer and community groups in the region as potential stakeholders was undertaken. In order to identify the concerns and issues associated with the proposed development which were relevant to these stakeholders, contact was established, a survey was distributed, and written submissions to the assessment were called for. The main objective of this survey was to determine the perceptions these groups held regarding the potential impacts of the Gladstone Area Water Board's proposals, on the community as a whole and on themselves as stakeholders.

The participants were asked questions on three major issues: impacts resulting from the construction and upgrading of the existing Awoonga Dam; potential impacts of the proposed dam on the Calliope River; and potential impacts from the proposed raising of the Awoonga Dam. Some twenty surveys were distributed. Details of survey responses are presented in Section 5.3.

Indigenous consultation

During the course of the study, government and community agencies associated with indigenous affairs and representation in the Gladstone-Calliope region were contacted. These agencies were informed that an Independent Social Impact Assessment was being undertaken for the Awoonga Upgrade and Calliope River Dam proposals and that the study presented an opportunity for comment if desired. It should be noted that the scope of the study did not involve components such as an indigenous cultural heritage survey.

Section 3.0

Community Overview

Introduction

The following section, Section 3.0, represents a social and demographic profile of the communities in which the Gladstone Area Water Board's proposals will impact. This is undertaken through a description of socio-economic characteristics of the regional community, Calliope Shire and selected communities within the Shire (Section 3.1). A profile of the respondents to the Community Survey is presented in Section 3.2. An identification of the main issues affecting the community as perceived by its members and the awareness of residents' to the proposed water infrastructure developments is also assessed (Section 3.3).

Through compiling a sound profile of *baseline* information for the various social, demographic and economic characteristics of the communities likely to be impacted, a greater appreciation of and ability to predict the type and significance of impacts within the communities is possible.

3.1 Community Profile

Setting of proposed developments

The proposals by the GAWB to construct a dam on Calliope River at Castle Hope Dam and upgrade the existing Awoonga High Dam on the Boyne River occur within the Local Government Area boundary of Calliope Shire. Calliope Shire is located on the Central Queensland coast surrounding the City of Gladstone and serves as Gladstone's hinterland. The urban centre of Calliope with a population of 2,000 is approximately 550 kilometres north of Brisbane by the Bruce Highway and is situated near the junction of the Bruce and Dawson Highways. Other major urban centres within Calliope Shire include Tannum Sands and Boyne Island with a combined approximate population of 6,700.

Calliope Shire has an area of 5875 square kilometres and includes the catchment of the Calliope River, which discharges into the Coral Sea immediately to the north of Gladstone, and ninety percent of the catchment of the Boyne River whose mouth lies 10 kilometres south of Gladstone. The Boyne and Calliope catchments are adjacent and exhibit areas of 2,547 and 2,150 square kilometres respectively, with the Boyne being the southernmost.

Calliope Shire includes the local centres of Mt Larcom, Raglan, Ambrose, Yarwun, Nagoorin, Ubobo and Many Peaks which have a predominantly rural focus. These townships generally support a general store, facility for petrol sales, vehicle repairs, unofficial post office, school and some a hotel.

Rural production within Calliope Shire largely consists of beef, dairy cattle, fodder cropping and tropical fruit production with some 477,000 hectares being utilised for these purposes. The Shire also contains major processing industries situated in proximity to the Port of Gladstone, including an aluminium smelter, cement clinker plant, two sodium cyanide plants,

chlorine plant and an ammonium nitrate plant. Calliope Shire is expected to experience further industrial growth and urban population growth.

Current and proposed development in the Gladstone - Calliope Region

According to the Queensland Government *Department of Tourism, Small Business and Industry*, several major development projects are currently planned or are underway in the Gladstone-Calliope Region, of which the Gladstone Area Water Board's proposals are included. In order to provide a broader regional development context to the proposed Gladstone Area Water Board developments, these projects are presented below.

Projects Committed

These include projects on which development is proceeding or where developers have announced a definite commitment to proceed with a project. This category may include projects which may be virtually completed, as well as those which may not have commenced.

- **Gladstone Water Supply Augmentation** - The Gladstone Area Water Boards proposals to construct a dam at Castle Hope on the Calliope River and raise the existing Awoonga Dam on the Boyne River (outlined in Section 1.1), are included in this group of projects. Detailed feasibility studies including flow management and impact assessment studies are continuing and expected to be completed in late 1998.
- **Aluminium Floride Project**, Yarwun Industrial Estate. Project to start in the first quarter of 1998. The aluminium fluoride plant is to start production by the fourth quarter of the year 2000.
- **Boyne Island Aluminium Smelter – Third Potline Expansion**, Boyne Island, 15 km south of Gladstone, scheduled for completion in the third quarter 1997.
- **QCL Gladstone Operations Expansion**, Gladstone. The facility will be commissioned in early 1998. First clinker production is expected in December 1997.
- **QCL Expansion Project – Railway Infrastructure Facilities**, Yarwun area, Calliope Shire Council, Rail site construction commenced in February 1997. The Infrastructure works were programmed for completion in October 1997. Full commissioning planned for December 1997.
- **Sodium Cyanide Plant Expansion**, Yarwun area, in Calliope Shire. Site construction commenced in June 1997, plant expansion is presently deferred.

Projects Under Study

These involve projects on which a considerable effort has recently been or is currently being directed to detailed feasibility evaluations. Although projects included in this category may not be proceeding in the immediate future, substantial project evaluation has been completed to enable fairly rapid movement to implementation should an investment decision be made.

- **Comalco Alumina Project**, Gladstone/Calliope or Bowen. Feasibility study is expected to proceed in the second half of 1997 and a decision to proceed with the project is anticipated in mid 1998.
- **Magnesium Metal Plant**, Australian Magnesium Corporation Pty Ltd - Yarwun Industrial Estate, Calliope Shire. Construction has started on the large-scale pilot plant. A decision to commit to full-scale commercial operations is expected prior to the end of 1999.
- **Nickel Refinery**, Calliope Metals Pty Ltd, to be located 14 km north of Gladstone City. Subject to favourable outcome of current studies, construction of Stage 1 should commence late 1999.

- **Stuart Oil Shale Project**, Stuart Energy - Processing plant will be located 15 km north-west of Gladstone. The oil shale deposit commences 8 km north-west of Gladstone, extends 18 km north-west and is 3 km wide. Construction is estimated to take approximately 2 years with first production targeted for first half 1999.

Comments

The projects above are concerned with manufacturing, mineral processing, mining and infrastructure development. Six of these major development projects are 'committed' to in the Gladstone-Calliope Region and largely in Calliope Shire. Four further projects are planned for the region within a three to four year time frame. Strong consideration must be given to the implications these multiple regional development projects may have regarding the potential cumulative social impacts on the communities of the region.

Even if IASs including Social Impact Assessment are conducted for individual projects the cumulative incremental impacts of several large scale projects within a relatively short time frame, on a given population need to be recognised and considered in terms of the individual project impact.

Demographic and Social Profile

Source of Profile Data

Some sections of the following data were sourced from specific *Collection Districts* within Calliope Shire, from the Australian Bureau of Statistics' *Census of Population and Housing, 1991* as at the time of compilation of this report 1996 census data at this scale was unavailable. These collection districts within Calliope Shire *Statistical Local Area (SLA)*, were selected on the basis of the proximity of their local resident populations to either:

- areas subject to and adjacent to inundation from the current water infrastructure development proposals, and
- areas adjacent to existing water infrastructure development ie, the present Awoonga Dam environs.

Where the data from collection districts within the Shire is being presented, it will be identified as such. These districts are displayed in **Appendix A**. Information at Shire and State scales is also presented in this section where appropriate and is similarly identified. Some of the State-based data is sourced from early releases of the 1996 Census. Other data sources include Education Qld.

Through this, a demographic and socio-economic profile of local resident populations, who were most likely to have been affected by previous water infrastructure development and those most likely to be directly affected by current proposals, can be identified. A similar rationale was used in the current *IAS for the Proposed Dawson Dam* (Hyder Environmental, 1997). For some aspects of the community profile this was preferable to a Shire-based or similarly inappropriate scale.

Population

Between 1986 and 1996, Calliope Shire has experienced substantial population growth with rates almost four times that of Gladstone City, the neighbouring Local Government Area, and nearly double the growth rate recorded for the State of Queensland for the 1991-1996 period (see Table 3.1). Calliope Shire also exhibits a dramatic increase in the rate of growth from

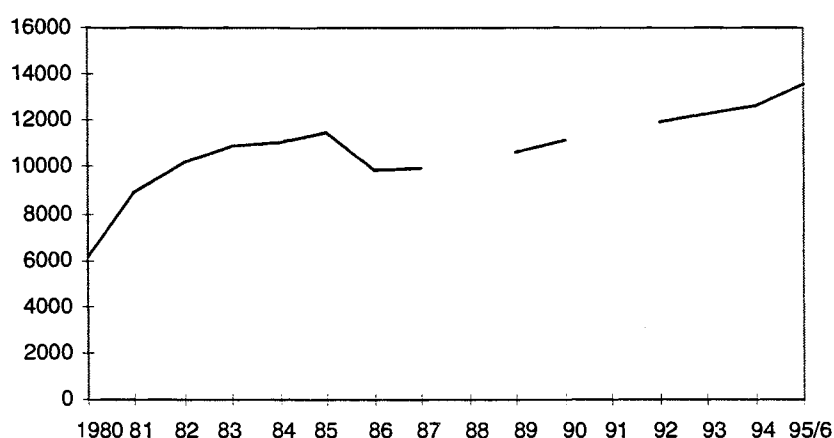
12.86% in the 1986-1991 period to 25.4% in the period of 1991-1996. Gladstone City has experienced a stable growth rate from 6.63%-6.45% for the same periods. The growth of the resident population is largely concentrated in the eastern urbanised areas of Calliope Shire, particularly the Boyne/Tannum area.

Table 3.1
Local Authority Growth Rates for Calliope Shire and Gladstone City for periods 1986-1991 and 1991-1996.

Local Authority	1986	1991	Difference	%	1991	1996	Difference	%
Calliope	9864	11133	1269	12.86	11133	13954	2821	25.4
Gladstone	23429	24983	1554	6.63	24983	26595	1612	6.45
Queensland					2,977,810	3,368,850	391040	13.13

(Source: ABS)

Figure 3.1
Population trend for Calliope Shire, estimates of resident population, 1980-1995/6



(Source: ABS Cat. no. 1306.3, Regional Statistics.)

Figure 3.1 displays the trend in population for Calliope Shire for the period 1981-1996. The trend exhibits pronounced increase in population from 1981-1985/6. This is followed by a notable decrease in numbers within the 1986-1988 period. From this time the population maintains a steady upward trend, regaining the previous 1986 level by 1992/3 and displays continued increase until 1996. It is worthy to note that the pronounced increase for the 1981-86 period corresponds with the construction phase of major water infrastructure development namely raising of the Awoonga Dam in 1984 and associated works.

Table 3.2 below, displays the population structure for the selected collection districts in Calliope Shire.

Table 3.2
Population Structure by Age and Sex for selected Collection Districts within Calliope Shire

Age Class	Males	Females	Persons	Prop %	
0-4	121	102	223	7.25	
5-9	140	165	315	10.24	
10-14	158	137	295	9.59	27.08
15-19	132	112	244	7.93	
20-24	89	77	166	5.39	13.32
25-29	79	98	177	5.75	
30-34	151	147	298	9.69	
35-39	135	119	254	8.26	
40-44	121	128	249	8.09	31.79
45-49	96	99	195	6.34	
50-54	92	85	177	5.75	
55-59	79	56	135	4.39	
60-64	68	56	124	4.03	20.51
65-69	62	38	100	3.24	
70-74	26	20	46	1.49	
75-80	24	18	42	1.36	
80-84	12	20	32	1.04	
85+	3	0	3	<1.0	8.13
Total	1588	1477	3065	99.83	

(Source: ABS Census 1991, C-Data.)

Based on the 1991 Census data, the sex structure for the selected collection districts within Calliope Shire, comprised of 51.81% males and 48.19% females. The proportion of males to females is slightly greater than for the State overall for the same period in 1991, where males constitute 50.13% of the population and females 49.87%.

The proportion of the population for the districts selected, under 15 years of age is 27.08%. This is a relatively young population when compared with the same age group for the State at 21.9%. This is also evident in the proportion of the population above 65 years of age, 8.13% compared with the State at 12.0%. The proportion of the population in the Calliope districts aged 25-44, 31.79% is greater than the State proportion at that age group, 30.2%. The selected Calliope districts record 13.32% of the population within 15-24 years whereas the State exhibits 14.8%.

Indigenous peoples & Native Title Issues

Table 3.3 and Table 3.4 below, display the proportion of people in areas of Calliope Shire and the Shire as a whole who identify themselves as Aboriginal or Torres Strait Islander.

Table 3.3 Aboriginality for selected Collection Districts within Calliope Shire, 1991

	Males	Females	Persons	Prop %
Aboriginal Persons	12	11	23	0.75
Torres Strait Islander Persons	3	3	6	0.2
Total Aboriginal and TSI Pers.	15	14	29	0.94
Other Persons	1512	1426	2938	95.6
Not Stated	46	31	77	2.5
Total Persons	1588	1485	3073	100

(Source: ABS Census 1991 C-data)

**Table 3.4
Aboriginality for Calliope Shire (as a whole) 1996**

	Males	Females	Persons	Prop%
Aboriginal Persons	89	112	201	1.44
Torres Strait Islander Persons	12	14	26	0.18
Total Aboriginal and TSI Pers.	101	126	227	1.6
Total Persons	7257	6697	13954	100

(Source ABS Census 1996 C-Data)

For Queensland an increase from 2.4% (1991) to 2.8% (1996) of the total Queensland population reported being of Indigenous origin. This compares with Calliope Shire which exhibits 1.6 % (1996) of people who reported of being of indigenous origin and 0.95% (1991) for the selected collection districts in or adjacent to the proposed inundation areas.

Gurang Land Council is the representative body in the region for Native Title issues. Two separate Native Title applications have been lodged in the Gladstone-Calliope Region including the areas designated for or adjacent to the proposed developments. These claims have been lodged by the Gooreng Gooreng People and the Bailai People, in September and August 1997 respectively, with the National Native Title Tribunal, through the Gurang Land Council.

The Gooreng Gooreng claimant group consists of approximately twenty family groups from ten clan groups. There are also a number of family groups and individuals outside of this official claimant group.

Mobility of Population

**Table 3.5
Usual Residence 5 Years Ago by Sex for selected Collection Districts within Calliope Shire, 1991**

	Males	Females	Persons	Prop %
Same address 5 years ago	786	725	1511	56.28
Different address 5 years ago:				
Same statistical local area	122	119	241	8.97
Different statistical local area in:				
Queensland	355	330	685	25.51
Other States	65	77	142	5.28
Overseas	15	10	25	0.93
Total Different	557	536	1093	40.7
Not stated	45	36	81	3.02
Total	1388	1297	2685	

(Source: ABS Census 1991, C-data)

In the selected collection districts within Calliope Shire some 56.28% of the population still occupy the residence they occupied 5 years ago and 8.97% of the population have moved within Calliope Shire. Some two thirds of the population have remained at the same residence or within the same Shire indicating a large proportion of people are relatively sedentary. A further 25.51% of the population have migrated to Calliope Shire from other areas within Queensland being the primary contribution to the population growth for the Shire evident in Table 3.1.

This migration to the Shire including 5.28% from interstate appears largely concentrated on the eastern fringe of the Shire in the major urban centres. From other observations the rural hinterland areas of Calliope Shire, namely the Calliope and Boyne Valleys, appear to be absent of this growth or inward migration. This is reflected in the difficulties experienced by residents of these areas selling property, and the lack of new residences reported by the locals in these areas.

Community Services and Facilities

The communities in Calliope Shire rely on essential service provision mainly from the eastern, urbanised sector of the Shire. Ambulance service operates from Boyne Island, Mount Larcom and the urban centre of Calliope. A district hospital is located at Gladstone.

Police Stations are open during particular hours in the centres of Tannum Sands, Calliope, Mt Larcom and Many Peaks. Community libraries are located at Boyne Island, Calliope, Mt Larcom and Builyan State School with a council employed librarian/liaison officer located at Boyne Island Library.

Gladstone City has a full-time Community Development Officer and Youth Support Worker funded through the Dept. of Families Youth and Community Care. It also provides a Gladstone and Region Community Support Service. Calliope Shire has no services of this nature.

Religious services, of a variety of churches, are held in a number of major and local centres throughout Calliope Shire, with a significant agglomeration in the centres of Boyne/Tannum and Calliope. The local centres of Yarwun, Ubobo and Mt Larcom also offer these services. In the local centres, services are only available once a month on average with ministers servicing the parishes of their denomination within the region.

Community welfare services such as *Alcoholics Anonymous* and *Meals on Wheels* are based in the Tannum Sands area. A Gladstone and district *Blue Nursing Service* is also available. Agencies such as the Community Health Services Centre, Community Advisory Service and Neighbourhood Centre and Department of Families Youth and Community Care are located in Gladstone, with the Department of Social Security at Boyne Island.

A number of producer based community groups such as the Yarwun/Targinne Fruit Growers Co-op Association Ltd., Cattlemans' Union and the United Graziers Association operate within the shire.

Community Halls operated by the CWA, RSL or local progress associations are present in most major and local centres. Most centres throughout Calliope Shire have an established and active Progress Association or Rate Payers Association with some districts also providing service groups such as *Rotary* and *Lions*.

Education

Formal facilities for childcare exist in the centres of Calliope, Boyne/ Tannum and Mt Larcom. A City Council Child Care Center is also present in Gladstone.

Figures 3.2a, b & c, below, display government school enrolments for the years 1975-1997 for; four schools in the Gladstone District including one State High School and three State Primary Schools; three State Primary schools in the Boyne Valley - Ubobo, Nagoorin and Builyan; and three schools in the Calliope area including Calliope State High School and State Primary Schools at Yarwun and Benaraby.

State Primary schools in the Gladstone district Figure 3.2a, have generally experienced a decline in numbers since 1975 to the present. Enrolment numbers are much greater in the Gladstone Districts in comparison to the Calliope Area schools and the Boyne Valley schools reflecting the relative population concentrations in the region. The State High School and two of the three State Primary Schools, in the Gladstone district, experience the period of enrolment increase from 1978 – 1982/3 and a marked slump in the period of 4-5 years immediately following. Since 1990 enrolments appear to have increased in the SHS, stabilised in two of the primary schools and declined notably in the remaining primary school.

Figure 3.2a

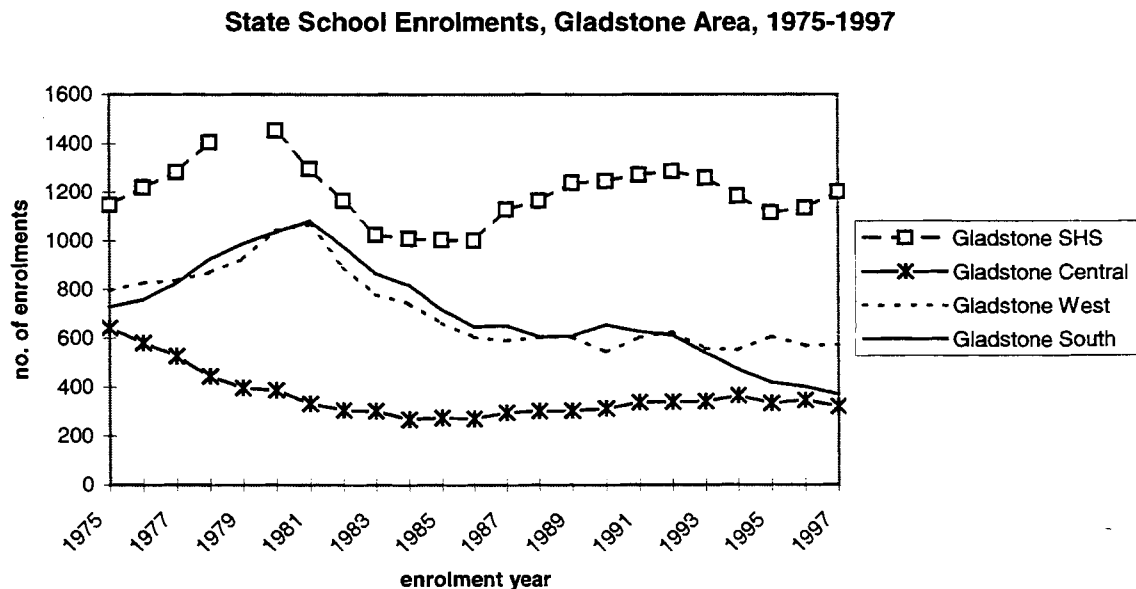
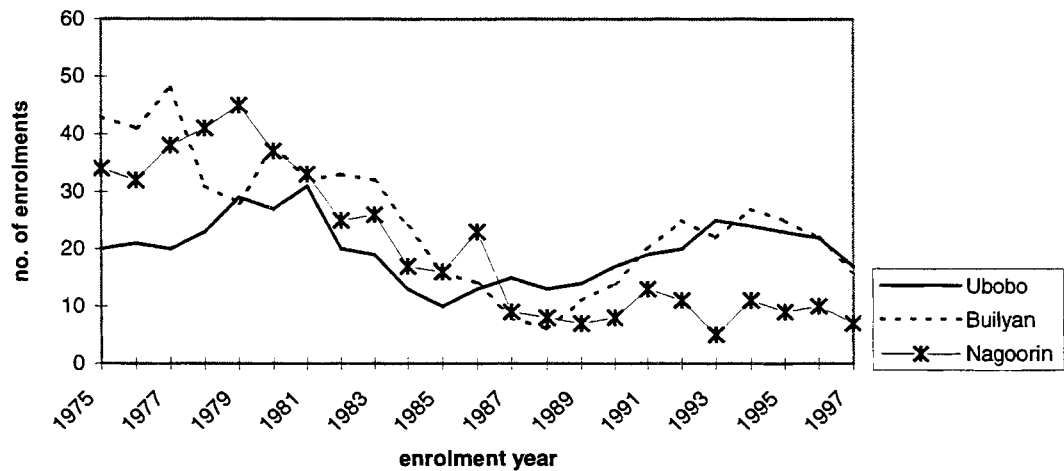


Figure 3.2b

State School Enrolments, Boyne Valley - Calliope Shire, 1975-1997

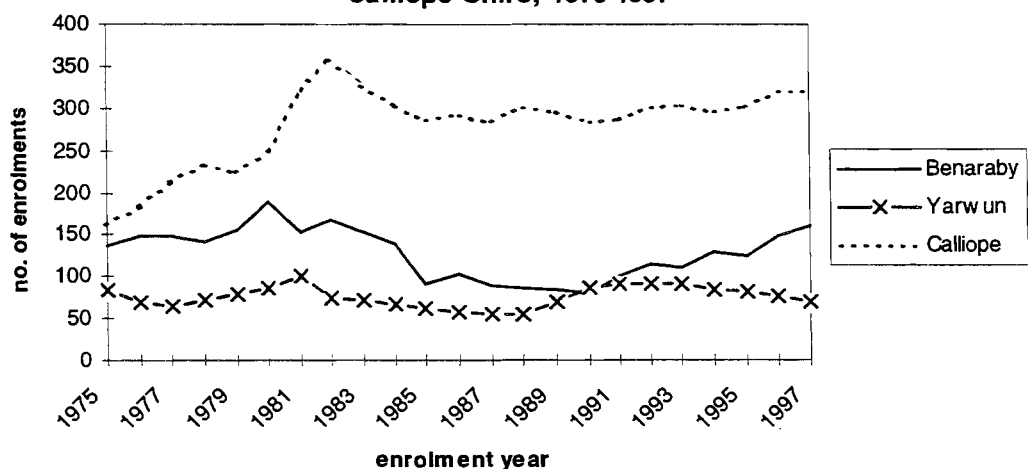


Enrolments for the State Primary Schools in the Boyne Valley (Figure 3.2b) display similar trends. Ubobo and Nagoorin schools in the mid-Boyne Valley appeared to be undergoing an increase in enrolments from 1975 through to 1980 and 1982 respectively. This period is followed however by distinct drop in enrolments carried through until 1990/1. Builyan State School similarly experienced a marked decline in enrolments for the period 1983-1990.

Enrolments for the three schools appear to be experiencing a decline over the last 4 years, following what appeared to be general increase in the early 1990's. This recent negative trend in enrolments may suggest that there is a lack of families with young children moving to the Boyne Valley. Residents in the area have expressed the belief that the loss of the schools through the apparent drop in enrolments is closely related to the declining status and structure of the Boyne Valley communities.

Figure 3.2c

State School Enrolments, Calliope, Benaraby and Yarwun - Calliope Shire, 1975-1997



Source: Department of Education, Queensland.

For schools in the Calliope Area (Figure 3.2c), enrolments increased markedly for Calliope SHS during the period 1980-1983/4. Enrolments also increased at Benaraby and Yarwun State Schools during the same period to lesser extents. All schools however exhibited a notable decline in enrolments in the period following 1983/4, with Yarwun and Benaraby sustaining these reduced levels for a further 5-6 years.

In the Calliope area the strong growth in enrolments in the early 1980s and the subsequent reduction in enrolments from the period 1983/4 –1990 correspond with the construction and post-construction phase respectively of the Awoonga Dam 1984 upgrade. The period of enrolment increase in the Calliope schools also corresponds with the period of strong population growth for the Shire 1980-1985.

Employment

Table 3.6
Employment for selected Collection Districts within Calliope Shire 1991

District ID	Approx. location (see map- Appendix A)	Available for work*	Unemployed	%Unemployed
3070106	Larcom Crk, Cedarvale	84	6	7.10%
3070107	Yarwun, Calliope R. Rd	180	35	19.44%
3070108	Dawson Hwy. Double Crk to Oaky Crk	102	12	11.76%
3070110	Tablelands, Diglum Crk	92	12	13.04%
3070111	Boyne Valley - east	114	10	8.77%
3070112	Boyne Valley - west	37	6	16.21%
3070202	Calliope Township - south	445	64	14.38%
3070205	Benaraby and environs	204	32	15.68%
3070213	Calliope Township - north	185	17	9.18%
Districts total		1443	194	avge. 13.44%

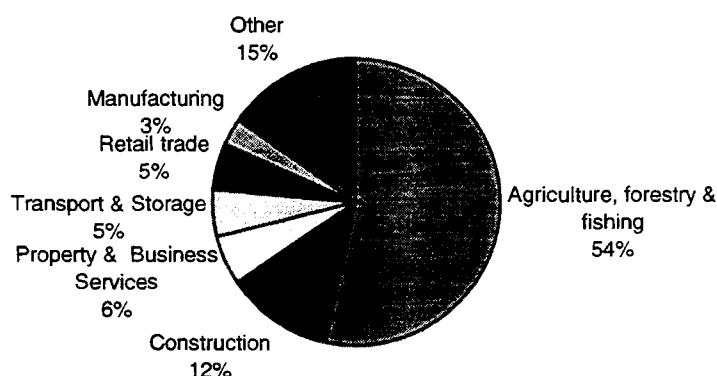
*Available for work refers to those in the labour force, males and females, over the age of 15 years
(Source: ABS 1991 Census)

For the selected collection districts presented in Table 3.6, a quite varied rate of unemployment across the districts is evident with highest unemployment rates evident in the Yarwun area (19.44%), the western side of the Boyne Valley (16.21%), the Benaraby area (15.68%), and the southern section of Calliope township (14.38%). Districts experiencing relatively lower rates of unemployment include Larcom Creek/Cedarvale area (7.10%), the eastern section of the Boyne Valley (8.77%) and the northern environs of Calliope Township (9.18%).

The profile of businesses which operate in Calliope Shire, Figure 3.3 below, consists of over half the establishments in terms of The profile of businesses which operate in Calliope Shire (Figure 3.3) consists of over half the establishments concerned with primary production (54%). The next highest sector in terms of number of locations is construction with 12% followed by Business and property services (6%), transport and storage services (5%), Retail trade (5%) and manufacturing (3%). Although these figures do not provide a true indication of the percentage of the population employed by these sectors, it does however reflect the prominence of specific sectors within the community and possible values that exist in the community associated with that prominence.

Figure 3.3
Business Locations Calliope Shire, 1996.

Business locations, Calliope Shire Pts. A & B, June 1996. (Source: ABS, Regional Statistics, QLD 1996)



Housing

Table 3.7
Nature of Occupancy by Landlord Type by Dwelling Type for selected collection districts, Calliope Shire, 1991.

	C'vans etc in caravan parks(a)	Other occupied private dwellings	total	prop %
Owned	20	446	466	37.8
Being purchased	3	269	272	23.1
Rented				
Housing commission/authority	0	3	3	0.3
Other government agency	0	13	13	1.1
Other	15	109	124	10.6
Not Stated	3	12	15	1.3
Total	18	137	155	13.1
Other (a)	6	126	132	11.2
Total	65	1115	1180	98.5

(a) comprises 'other/inadequately described' and 'not stated'.

(Source: ABS 1991 Census, C-Data)

In the State of Queensland in 1991, 40.7% of occupied private dwellings were owner-occupied, compared to the Calliope districts which recorded 37.8% in the same year. With the proportion of dwellings being purchased in the Calliope districts at 23.1% compares with the State figure of 23.9%. The proportion of dwellings being rented within the Calliope districts 13.1% is significantly lower than at State level which records 28.5%. This may indicate a lack of available rental accommodation in the Shire at this time.

Recreation

Table 3.8 and Table 3.9 below, list the main identifiable recreation sites and the uses of those sites within both the Calliope and Boyne River catchments.

Table 3.8
Calliope Catchment area Recreational Sites and uses

LOCATION	TENURE	CURRENT USE
Calliope R. (Beecher)	Recreation Reserve	Fishing
Calliope R. (River Ranch Estate)	Park Reserve	
Calliope R. (Old Bruce Hwy.)	Road Reserve	Boat ramps, picnics, swimming, water skiing, fishing
Calliope R. (Bruce Highway)	CSC – leased to Historical Society	Historic Village - arts and crafts
Bunting Park Calliope	Recreation Reserve	Conventional Sports Field
Calliope R. (Catfish Creek)	Recreation Reserve	Picnic and swimming area
Calliope R. (Castle Hope Crossing)	Road Reserve	Picnics, swimming and camping
Mt Larcom Peak	National Park	Bushwalking
Targinnie Creek	Landing Reserve	boat launching
Boat Creek		boat launching
The Narrows (R162)	Camping and Water Reserve	boat ramps, popular meeting point
State Forest 60	State Forest	bushwalking and nature based recreation

{Main Source: QDPI (1992, p.26)}

A publication by the Department of Primary Industries, Qld. in 1992, an *Overview of water resources and related issues - the Curtis Region*, states that potential exists for the sites listed in Table 3.8 to be promoted as a network of recreational facilities in the Calliope catchment area (QDPI, 1992).

Table 3.9
Boyne Catchment area Recreational Sites and uses

LOCATION	TENURE	CURRENT USE
Boyne R. (Bruce Highway)	Road reserve	Picnics, swimming, canoeing, fishing
Boyne R. (Pikes Crossing)	Road reserve	Picnics and swimming
Lake Awoonga Recreation Area (Coomal Bay, Ironbark Gully)	Gladstone Area Water Board	Picnics, swimming, boat ramps (sailing, skiing) fishing.
Mt Castletower	National Park	Bushwalking
Boyne R. (Boynedale Crossing)	Road reserve	Picnics, camping and swimming
Futter Creek (Dimmer Crossing)	Road reserve	Picnics and swimming
Futter Creek	Environmental Park	Picnics and swimming
Boyne R. (Nagoorin Crossing)	Road reserve	Swimming
Boyne R. (Gladstone-Monto Rd)	Camping and Water Reserve	
Kroombit Tops	National Park	Camping, bushwalking, picnics, scenic values, links to National Trail

{Main Source: QDPI (1992, p.41)}

It is worthwhile to note from Tables 3.8 and 3.9 that a large number of ‘informal’ recreation sites – such as designated Road Reserves - exist and are used for a range of outdoor recreation purposes. Nearly all sites listed are associated with the Boyne and Calliope Rivers

or their tributaries such as Catfish or Futter Creeks. Given the proposed sites and inundation levels for the proposed developments it is likely that a number of these sites may either be subject to inundation or have their amenity and/or character altered or lost.

In particular the Catfish Creek Recreation Reserve and the Castle Hope Crossing Road Reserve located on the Calliope River, and, the Boynedale Crossing and Nagoorin Crossing Road Reserves on the Boyne River, appear likely to be affected.

Downstream recreation sites from the proposed developments may also be subject to diminished amenity or alteration of their current qualities, particularly if a reduction in water levels and water quality in the main river courses results from the proposals. Possible downstream sites subject to effect on the Calliope River include the Recreation Reserve at Beecher and the Road Reserve adjacent to the Old Bruce Highway on the Calliope River. On the Boyne River, Road Reserves at Pikes Crossing and the Bruce Highway may be affected in some way.

Significant recreational resources - provided by the Gladstone Area Water Board at Lake Awoonga, - have resulted from the construction and upgrading of Awoonga Dam. These sites, and the Lake itself, have a high profile within the community and also serve as a regional tourist destination. The main sites consisting of Coomal Bay/Riverston Bay and Ironbark Gully have seen increasing visitor numbers with visitation at 160 000 in 1993/94, 170 000 in 1994/95 and 235 000 in 1995/96. Ironbark Gully has become the most intensively used site since completion in March 1996. (GAWB, 1996a)

Recreational Fishing

Due to the lower Calliope River's proximity to urban centres of Calliope and Gladstone City, it serves as a major recreational resource for the population of these areas., as part of a recent study of recreational fisher activity and patterns of use on the lower Calliope River (Platten, 1997), 711 anglers were contacted during 35 surveys, over a twelve month period from June 1996 to June 1997. The major results show that on any weekend some 60 people will typically fish the Calliope on each day, while approximately 40 will fish it each weekday. Platten (1997), also states that this intensity of use occurs throughout the full year.

Ease of access to the Calliope River is believed to be a valuable factor for anglers (Platten, 1997). Species of fish taken on the lower Calliope River were also recorded in the survey, including; Bream, Grunter, Cod, Whiting, Trevally, Catfish and Mudcrabs.

European Cultural Heritage

Calliope Shire and environs has two active community groups in the area of identification and preservation of European cultural heritage; the Boyne Valley Historical Society and the Port Curtis Historical Society Inc. which is associated with the Calliope River Historical Village consisting of relocated buildings of local historical significance.

Although a survey of European cultural heritage is not within this study's Terms of Reference, several dwellings were identified during consultation and interviews with residents of Calliope Shire as having some perceived historical significance. To provide an indication of these sites, two brief examples are outlined below.

1. **“Cluden” Nagoorin, Boyne Valley**, property established 1892, original homestead dwelling 98 years old, will celebrate centenary in 1999. Present residents are fourth consecutive generation on property. Stand of 400-year-old (estimate) riverine Blue Gums in homestead environs. Homestead and environs subject to inundation.
2. **“Wycheproof” Calliope, Calliope Valley**, property originally a portion of “Stowe”, purchased by John and Harriet Menzies in 1889 who had moved from Victoria in 1878 as some of the original settlers to area. The property was named “Wycheproof” due to the Menzies’ previous connections in Victoria. The property represents a significant local / regional cultural site. The site of the Menzies’ graves (imported Italian marble dated 1890 & 1903) are located on the property in the proposed inundation area (Figure 3.4). The property currently receives visitors / tourists from within region and interstate, namely Victoria.

Figure 3.4

Photograph of the Menzies’ graves, dated 1890 & 1903, located on “Wycheproof” property in the proposed Castle Hope Dam (FSL EL 35.0m) inundation area.



Existing Community Water Resources

Under the Water Resources Act Some 50 licences have been issued authorising landholders to divert up to 4200 megalitres per annum from streams in the region. The majority of these licences have been issued along the Boyne and Calliope Rivers. (GAWB, 1996b p.6)

Section 3.1 Community Profile – Review

Calliope Shire exhibits a high growth rate in population, twice that of Queensland. The growth of the resident population is largely concentrated in the eastern urban areas of the Shire. Calliope Shire experienced a particularly high growth period in population 1981-86, corresponding with several regional development projects including the 1984 upgrade of the Awoonga Dam. This was followed by a 3-4 year slump in growth before the Shire regained 1986 population levels by 1992/93. Calliope Shire has a relatively young population in comparison with the state for people 15 years or younger, yet the 15-24 years age proportion is lower than the state average.

The rural hinterland areas of Calliope Shire have largely sedentary populations and appear to be absent of the growth and inward migration evident in the eastern fringe of the Shire.

Essential and community services are concentrated in the eastern urban centres with the exception of a community library at Buliyan state school and semi-permanent police station at Many Peaks. Several producer based community groups are active in the shire. Rural residents rely heavily on access to larger urban centres for services particularly in the case of Boyne Valley residents and the dependence on the Gladstone-Monto Road.

There are at present Native Title Claims by local indigenous claimant groups, the Gooreng Gooreng and Bailai Peoples. These groups and other local indigenous residents of Calliope Shire have been recognised as stakeholders in the development proposals.

Enrolments in state schools across the region appear to have increased notably in the early 1980's and tended to experience a marked decline in enrolment numbers from the mid to late 1980's. This decline in enrolments was more pronounced in the Boyne Valley localities. The increase in enrolments corresponds with periods of development activity in the region (including the Awoonga Dam upgrade completed in 1984) with marked decline in enrolments corresponding with post-development periods. Rural residents tend to associate the reduction in enrolments with a broader decline in the status and structure of the local rural communities associated with those schools.

Based on 1991 figures high unemployment rates (14-19%) were recorded at in several locations within Calliope Shire, notably Yarwun, Benaraby, Calliope township, and sections of the Boyne Valley. Fifty-four percent of business locations in Calliope Shire are involved in primary production activities (including agriculture, commercial fishing and forestry) with the construction industry the second most common business type (12%). This gives some indication of the proportion of the population involved in these activities for income as well as the predominating values that exist within the Shire.

Primary production and nature-based outdoor recreation are the main pastimes in the Shire. Several informal recreation areas in the shire may be subject to inundation as a result of the proposed developments. Studies by Platten (1997) highlight the significance of the lower Calliope River for recreational fishing.

Several properties and dwellings were identified as having suspected European cultural heritage values. A full cultural heritage survey of the properties in the inundation area is required to assess the potential loss of those values to the local and regional communities.

The communities of Calliope Shire and region are facing multiple regional development projects currently and in the immediate future. With this regional environment exists the potential for cumulative social impacts of the individual proposals to be undervalued.

Section 3.2 Respondent Profile (*Community Survey* respondents)

This section provides an overview of social and demographic characteristics of the respondent population, that is those residents who returned a completed or partially completed *Community Survey*, it does not include interviewed landholders.

A total of 284 mail surveys were returned from the 1120 distributed to residents of Calliope Shire providing a 25.4% response rate. This rate of response was viewed as positive given the length of the survey and level of detail requested. Of the 284 surveys returned, 268 were returned soon enough to be incorporated into the following data sets. The information provided within the remainder 16 surveys has been included into the relevant sections although has not received any statistical analysis.

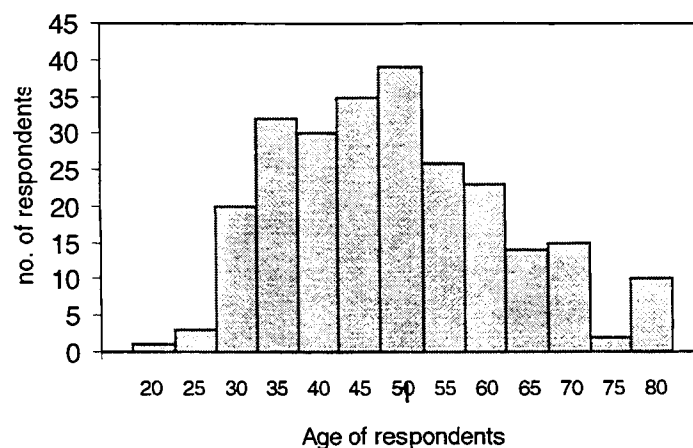
Gender

From the 250 respondents who stated their gender, males constituted 74% of the respondent population with female respondents the remaining 26%. This gender bias has implications for the nature of the responses to be dominated by male values.

Age

The age distribution of mail survey respondents is displayed in Figure 3.5. The ages of respondents ranged from 20 to 82 years. The highest proportion of respondents are within the 35 to 50 age group yet there is also notable representation in the other age groups above 50 years and at 30 years. The low contribution from the 20-29 age group may be attributed to the survey being addressed to and subsequently completed by the rate payer/s of the household. It was intended this could be avoided by provisions for additional surveys on request (see Section 2.2). If response is used as an indicator of interest/concern regarding the proposed developments, it can be seen that interest exists across most age groups in the communities concerned.

Figure 3.5
Age distribution of mail survey respondents



Marital Status and Children

Regarding the marital status of respondents, 83.7% were in a married or defacto relationship, 6.4% had never married, 6.1% were divorced or separated from their partner and 3.8% of the

respondent population had been widowed. Eighty-four percent of respondents indicated that they had children, however only 44.1% of respondents children were 15 years and younger.

Length of time in current residence

The length of time that respondents had been in their current residence was also collected. Those who had been in their current residence less than 5 years constituted 11.3% of respondents. Nearly half the respondents (45.4%) have been in their current residence for 5-10 years. Some 28.6% have been at their present home for 15-30 years and a further 15% had been living at their current residence for 35 or more years. The average length of residence was 15.8 years.

From this it may be assumed that a sizeable proportion of respondents (43.6%) were in their present residences during the upgrade of the Awoonga Dam completed in 1984 and some 15% of respondents were at their current residences during the initial construction of the Awoonga Dam. This is important to note as it provides an indication of the number of residents who are able to provide a continuous account of issues and events in the area, particularly relating to previous water infrastructure development. This in turn provides a context to assess the responses presented in the following sections.

Previous residence

Table 3.10 displays the previous residences of respondents. Approximately one-third of respondents are in their original dwellings and subsequently have lived in their present district all their lives and would retain some knowledge of the history of the area. As the survey population consisted of residents from within Calliope Shire (excluding the Boyne-Tannum urban centre), it is important to note that some 30.1% of respondents have relocated to the Shire from the City of Gladstone and a further 5.3% from the adjacent urban centre of Boyne-Tannum. Some 24.8% of respondents have relocated within the remainder areas of Calliope Shire. A small proportion of respondents have relocated to the Shire from the Rockhampton area, Callide Valley and from outside the region (2.8%).

Table 3.10
Previous residence of respondent

	no. respondents	percentage of respondents %
Gladstone	74	30.1
Calliope, Mt Larcom, Benaraby, Beecher, Bracewell, River Ranch	42	17.1
Boyne Valley	16	6.5
Boyne/Tannum area	13	5.3
Yarwun	3	1.2
Rockhampton area	2	0.8
Biloela, Callide Valley	3	1.2
No previous residence, inadequately described	91	37
Not in region	2	0.8
total *	246	100

* total number of respondents who answered question

Occupation

Of the respondents who stated their main occupation (Table 3.11) approximately one third are employed in primary production activities including grazing, fruit production and lucerne farming. However the largest proportion of respondents (49%) were employed in other sectors including service, retail, transport and construction sectors. This group also includes home duties and child care. Those employed in professional areas constituted 11.1% of respondents. The same number of respondents (11.1%) stated they had retired from full-time employment.

Table 3. 11
Major occupation of respondents

	no. of respondents	percentage of respondents %
Primary production	75	28.7
Other (non-professional)	128	49
Professional	29	11.1
Retired	29	11.1
total*	261	100

* total number of respondents who answered question

Other interests of respondents

When the data on respondents' involvement in primary production activities, from Table 3.11 and Table 3.12 (below) are combined, it can be seen that some 51.7% of the respondents are involved in some aspect of primary production. Other important characteristics of the respondents include that 30% take part in outdoor or nature-based recreation. It was also indicated by respondents and those interviewed that these activities occur locally within the Shire and are strongly associated with the Rivers and related creeks in the area (see Section 3.1, *Recreation*).

Table 3.12
Other interests, occupations, pastimes of respondents

	no. respondents	Percentage of respondents %
Outdoor/nature based recreation. (swimming, camping, bushwalking, fishing)	91	30
Primary production	69	23
Organised sport	50	17
Community Service	27	9
Other recreation	43	14
Other employment	19	6
total	299	

n=215

mean responses=1.4

multiple response- no limits¹

¹ This was an open ended question to which respondents could provide as many answers as they liked, with their most important activities likely to be reported and minor activities under-reported.

Group membership of respondents

Group membership within local communities has been stated to identify and encourage community involvement in local issues and contribute to local communication and information networks (Connell 1994; DPI 1992b). This established involvement and communication networks may provide a local community some means to respond to or buffer local change, such as that generated by a development proposal. Table 3.13 below displays group membership amongst Community Survey respondents.

Table 3.13
Group membership of respondents

	No. respondents
Producer group	15
Progress Assoc. / Taxpayers Assoc.	10
CWA	7
Landcare/Soil conservation group	17
Social, sporting clubs	41
Community service groups (P&C, Rural Fire Brigade etc.)	42
Church groups	11
Local action group	3
Other	3
Total group membership	149
Not member of group/Not stated	156
total	305

n=265

mean responses =1.2

multiple responses - no limits

Table 3.13 shows that some 41% of survey respondents were active in some form of community group with the highest number of these being members of community service based groups (rural fire brigade, Parents and Citizens etc.) and sporting and social groups. It was apparent however, in the survey responses and during the interviews that some members of the community are members of several groups and often hold positions of responsibility on one or more of those groups.

Section 3.2 Review

Survey respondents were predominantly male, between 30-55 years of age and were in a married or similar relationship. Forty-three percent of respondents were in their current place of residence during the completion of the 1984 Awoonga dam upgrade and fifteen percent during the initial construction of Awoonga Dam. These respondents may contribute to a continuous account of issues and events relating to previous water infrastructure development in the region and its impacts on the communities.

One third of the respondent population are in their original dwellings in Calliope Shire with a further third having relocated to Calliope Shire from neighbouring Gladstone City. A large proportion of the remainder have relocated from within Calliope Shire.

Approximately half the respondents are employed in retail, transport or construction industries with one third stating their main employment was primary production. Including secondary income sources Fifty one percent of the respondents were involved in some aspect of primary production.

Outdoor, nature-based recreation was a prominent amongst the respondents with one third of respondents undertaking such activities. Forty-one percent of respondents are active in local community groups of various forms.

The main differences between the respondent population and the general community profile gathered from ABS and other data sets can be seen as:

1. The respondent population consists of a more limited age range and a gender bias exists towards male members of the population.
2. In terms of major occupation, primary producers are under-represented in the respondent population which exhibits a greater proportion of respondents involved in construction and other industries than is evident in the regional statistics.

Section 3.3

Community Issues and Awareness of Proposed Water Infrastructure Developments

Important issues within the community - survey responses

As a component of the *Community Survey* distributed to residents of Calliope Shire, residents were asked to state 'the most important issue facing residents of this area'. The purpose of this was to ascertain what issues were prominent in the residents' minds at a broader regional or community level, and to what degree these issues related to the proposed water infrastructure development. The issues are presented in Table 3.14 below in two parts. The first part of the table consists of the more prominent issues, stated by 15-25% of respondents.

Table 3.14

**Most important issue for the community / region as perceived by residents
(Part 1) More commonly stated issues**

Industrial growth and related increased demand for water
Uncertainty and the need for information regarding the proposed developments
Environmental concerns regarding the proposal (including siltation, estuary damage, fish loss, bias IAS process)
Inundation of good productive land and relocation of landholders
Employment / unemployment
Condition of local community infrastructure and service provision (schools, roads, community services)

The second part of Table 3.14, below, consists of regional or community based issues which were also stated by respondents but were less common (stated by less than 15% of respondents).

Table 3.14

**Most important issue for the community / region as perceived by residents (contd.).
(Part 2) Less commonly stated issues**

Decline in rural communities
Decline in rural production
Personal stress/loss of lifestyle and heritage relating to the proposed developments
Compensation of affected landholders
Drought, weather conditions
Native title

n=215

mean responses=1.2

Four of the six most commonly stated issues of residents who responded (Table 3.14, part 1) relate directly to the proposed developments; regional industrial growth and water demand, uncertainty with respect to the proposal associated with a perceived need for related information, environmental concerns associated with the proposals, and inundation of land and relocation of landholders. The other two issues: unemployment and condition of infrastructure may relate indirectly to aspects of the development proposals.

Two of the six less commonly stated issues (Table 3.14, part 2) relate directly to the proposals; personal loss of lifestyle/ personal stress, and, compensation for affected landholders.

Whilst undertaking preliminary consultation it was noted that the issue of ‘employment / unemployment’ was recurring within discussions at public meetings. In order to assess the perceived importance of this issue within the broader community a closed-ended question relating specifically to unemployment was included in the mail survey (Table 3.15).

Table 3.15

Responses of residents to: ‘Unemployment is THE major social problem in the Gladstone / Calliope region’

Respondent	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Women	19	33	13	23	6	6
Men	18	36	14	24	5	3
Primary producers	20	35	8	27	5	4
Other — non-prof	17	34	14	24	7	3
Professional	10	41	10	31	3	3
Retired	21	29	29	7	4	11
Total %	18	34	14	24	6	4

n=262 (n = the number of respondents who answered the question)

Table 3.15 indicates that there is fairly strong agreement that unemployment is the major social problem in the region. This reflects the above average rates of unemployment for certain districts within Calliope Shire presented in section 3.1. These results however should be assessed in the context of other issues perceived as important as presented in Table 3.14.

Important issues within the community - interviews

The nature of the personal interviews with residents of Calliope Shire, as differing from the above survey responses, provided a greater diversity of responses and often provided more detail into the major issues confronting residents of the area.

Industrial growth in the region and related issues were stated by a number of residents, these included:

- With the region a focal point for so many potential projects - residents were “fed-up with speculation and conjecture regarding development proposals”;
- beliefs that there was too much proposed industry, and that there had been a push for regional industrialisation and investment for 20-30 years now;
- Gladstone area was changing from a rural to industrial resource-based economy and community;
- localities in Calliope shire situated on the Gladstone periphery such as Mt Larcom, were becoming “working class suburbs of Gladstone” with these localities experiencing industrial pollution, resumption of land for industry and declining real estate values as a consequence.

The **condition of rural communities** was also raised as an important issue;

- lack of young people and a lack of community cohesiveness and motivation within the community for self help or adjustment, absence of social networks within the communities, and sense of community -mindedness that was once present
- declining population in rural communities, no local employment, decline of rural industry
- poor condition of infrastructure particularly roads, education and medical services, rural communities at extremity of service provision boundaries.
- There was also strong feelings amongst residents that local authorities were using the uncertainty generated by the dam proposals to validate lack of service provision to certain sections of the Shire, particularly the Boyne Valley.

Employment opportunities

- industry operates on a boom-bust cycle with lay-offs then incoming industry generating work.
- poor cattle prices have impacted heavily on the local rural labour force

Of the other important community issues raised within the interviews by residents, a number relate directly to the proposals of the Gladstone Area Water Board such as;

- the uncertainty generated by the proposals compounding viability problems for producers, and, the loss of valuable grazing properties from the Castle Hope Dam inundation area, declining water quality in the Boyne and Calliope Rivers.

Other issues reflect more general concerns such as; tariffs on agricultural trade, variability of rainfall, prolonged drought, over-clearing, recent Native Title applications and maintaining property viability.

Ways of addressing community issues - as perceived by survey and interview respondents

Residents were asked what they believed was needed in order to address the issues they had identified as being most important within the community or region (Table 3.14). From the survey respondents who provided a means of addressing the above issues, the most prominent means were:

- the supply of information and communication from proponents of regional developments and increased community consultation and involvement (27%);
- further industrial and water supply development (19%); and,
- the need for sound regional long term planning including sound IAS undertaken for regional development proposals (12%).

Other means of addressing these issues which were less prominent in the responses (<10%) included; that a decision was required on proposals, not to proceed with proposals, compensation of those affected, ensuring environmental factors were a priority in the decision, water policy and water use reform, and, an upgrade of existing roads and services. Some respondents also stated that no course of action would be able to address the issues.

Respondent Awareness of proposed water resources developments

Prior to receiving the *Community Survey* distributed by RSERC in September 1997, some 90% of respondents stated they were aware of the Gladstone Area Water Board's proposal to upgrade the existing Awoonga Dam, and, 92.4% of respondents stated they were aware of the proposal to construct a new dam on the Calliope River at Castle Hope.

Table 3.16 below, indicates that the vast majority of respondents were informed of the proposed water resources development by the Gladstone Area Water Board in two ways, through personal communication with other community members and, through the print and electronic media. It is important to note that only a small proportion of survey respondents have had direct contact with the proponent, through notification or public meetings, despite the *community survey* being distributed within areas subject to or adjacent to the proposed inundation areas. Further, over 12 months had lapsed since the release of the *Water Supply Source Options* study, by the Gladstone Area Water Board outlining the preferred strategy including proposals.

A small proportion of respondents became aware of the proposals in what was felt by them to be less than appropriate way, that is, through observing and questioning surveyors on their property. This experience was also shared by a number of interviewed residents from the Calliope inundation area.

Table 3. 16
How respondents became aware of the Water Board proposals.

	no. respondents	percentage of respondents %
Media (newspaper, television, radio)	174	71
Local personal networks	75	31
Contact with government agencies, local government or Gladstone Area Water Board members	7	3
Attendance at public meeting mid-1996 for release of Water Supply Options Study.	8	3
Direct notification by proponent (GAWB)	6	2
Surveyors on property	4	2
Historical knowledge of water supply options	6	2
Local planning documents	2	1<1
Total	352	

n=244

mean responses=1.4

multiple responses - no limits

Other respondents to the survey and in the interviews stated that they had been aware of the potential for one or both proposals, for a considerable period of time (15-30 years), however this was more evident from those located in the Boyne Valley and constituted 6.5% of the survey respondents. Respondents who had been aware of one or both of the proposals for approximately 2 years were 26% of those surveyed, for approximately one year, 34%, and for 6 months or less, 20.6%.

Section 3.3 Review

When asked to state the most important issues facing communities in the region respondents largely referred to issues associated with the proposed Gladstone Area Water Board developments. These issues included increased industrial growth and demand for water,

uncertainty and the need for information regarding the proposals, environmental concerns and the inundation of productive land and relocation of local landholders.

The importance of unemployment as an issue was explored. Results indicate that it is perceived as a major social concern by most of the population, yet is only one of a number of pressing community concerns. The interviews revealed that issues associated with potential changes in residents' lifestyle and the region's character relating to industrial growth, the declining condition of local rural communities and the inconsistency of employment opportunities were perceived as most important.

Regarding community awareness of the proposed Awoonga Dam upgrade and dam construction on the Calliope River at Castle Hope, over 90% of the respondents were aware of both proposals, indicating a high level of general awareness within the area attained through local social networks and the electronic and print media. However, some residents stated that the means by which they were informed was inappropriate, given the potential impact from the proposals on their properties. Approximately half the respondents have been aware of the proposals for less than 12 months (based on data collection period in Sept 1997).

Section 4.0

Water Issues & Effects of Previous Water Infrastructure Development in the Region

Introduction

This section of the report, Section 4.0, is concerned with establishing in what ways has the communities of the area have been affected by water related issues and by previous water infrastructure development - particularly the construction and subsequent upgrades of the Awoonga Dam on the Boyne River. Attempts are also made to ascertain the communities' perception regarding future demand for water in the region, in the case of projected water supply demands stated by the proponent, the Gladstone Area Water Board.

4.1 Previous water issues affecting the community and projected demands

The water issues that have affected the community in the past, as perceived by the survey respondents, are presented here. Some 41% of respondents stated that there were no previous issues or they were unsure or did not know. Residents often qualified this response by indicating that they had not been living in the area long.

The **most prominent water issue** in the region (referred to by 60 of the 184 respondents who stated an issue - 32.6%) was the damming of the Boyne River and subsequent upgrades of Awoonga Dam. References to this issue appear largely negative in character consisting of siltation, land resumption, inundation, damage to the fishing industry and declining river health.

Other more prominent issues included;

- Declining water supply to communities and townships
- Conflict over underground water supply (including QCL depletion of Mt Larcom area, bores in the Boyne Valley) and
- Drought and the variability of rainfall

Other water related issues raised by survey respondents included; salinity issues, other water delivery infrastructure such as pipelines (cost, disruption, construction, inefficiency and increase in supply) and issues relating to Mann's Weir.

Water Issues raised during interviews

The information presented here, relating to water issues in the community as collected during interviews, is presented as either responses of residents in the Calliope area or the Boyne Valley. This is to ascertain whether there are water issues which are particular to an area, or whether similarities exist across the region.

Water Issues for Boyne Valley Residents - previous and current

- Communities in the upper Boyne Valley were unable to access water from Awoonga Dam or pump from Boyne River, only supply is private bores.
- Boyne valley communities unable to draw any benefit from a resource (their River) yet that resource is used to supply water for urban areas and industry outside the valley. Benefit of Awoonga Dam only to downstream users.
- Inefficient supply and inequitable distribution of water to the Callide Valley from Awoonga Dam
- Construction of Awoonga Dam has raised natural flood levels
- Concerns over gravel extraction from the Boyne River
- Absence of major flows in the Boyne River since 1947
- Differences in allocation and costs of water between users has caused problems

Water Issues for Calliope Area Residents - previous and current

- Viability of the proposed Castle Hope Dam in relation to rates of evaporation, topographic suitability of site (resulting shallowness of water).
- Recognised need for environmental flows and how this may effect viability of supply for industry which would result in restriction of environmental flows - not a suitable outcome.
- Depletion of underground water stocks in area
- Calliope area subject to periods of drought, highly variable rainfall
- Water board has been supplying water too cheaply to industry at the expense of the community
- Upgrading of Awoonga Dam alone will not be sufficient to supply the needs for industrial regional growth, need for dual supply source security.

The two prominent issues which were evident from interviews with Boyne Valley residents, with respect to water issues in their area, was firstly the apparent inequity of access to, and cost of water from, the present Awoonga Dam storage and the Boyne River, and secondly changes in the physical character of the Boyne River and its flow regime. Water issues for the residents of the Calliope Area who were interviewed tended to take the form of concerns relating to the environmental and economic sustainability of the proposed Castle Hope Dam, its viability and the increasing water supply required for industry.

Conflict over water resources in the communities in the Boyne Valley, demonstrates the potential for a similar situation to arise post-construction of Castle Hope Dam. There appears to be a real need to address both the existing inequity and access in the Boyne valley and the potential conflict in the Calliope area.

Water supply Projections

During preliminary consultation, concerns were raised by residents regarding the validity or accuracy of the required water supply projections for the region as part of the *Water Supply Source Options* study. As these projections relate directly to the proponent's rationale for further water infrastructure development, the acceptability of the projections within the community is indicative of the perceived need for the proposals to meet these projected demands. For this reason survey respondents were asked to indicate their level of agreement or disagreement to the statement 'Estimated demands for water in Gladstone are over-rated'. The results are presented in Table 4.1.

Table 4.1
Response of surveyed residents to ‘Estimated demands for water in Gladstone are over-rated’

Respondent	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Women	11	12	11	23	19	25
Men	7	18	9	35	16	16
Primary producers	11	20	5	29	19	16
Other — non-prof	6	13	12	38	16	16
Professional	3	24	10	28	10	24
Retired	7	14	4	21	21	32
Total respondents	7	17	9	32	17	19

n=263

Table 4.1 implies that approximately half of the respondents believe that the projected water demands for the region are *not* over-rated. However, there is still approximately one quarter of respondents who indicate that the projected demands are over-rated, with the strongest members within this group being primary producers and professionals. A moderate proportion of respondents indicated they were neutral or did not know. This indicates that approximately half of the residents surveyed perceive there is a need for increased water supply in the region.

When the interviewed residents were asked whether they were aware of the water projections outlined by the *Water Supply Sources Options* study and whether they thought these were realistic, a variety of responses were recorded. Some representative examples are outlined below;

- feelings that the projections were not realistic or accurate - that the Water Board was only guessing and that the projections were politically motivated to secure industry.
- belief that *potential* exists for industrial development and hence increased water supply but the reality of industrial growth unlikely to match potential.
- number of respondents believed that projections were realistic given that nominated industry arrives in region, or anticipated industrial growth occurs, perhaps estimates even conservative.

Comments on perceived projections and water supply issues

Two things seem apparent here, firstly, the claim that increased water supply in the region is necessary to meet future industrial demand is not accepted by all members of the community. Because of this further additions to water infrastructure, namely the proposals, cannot be justified in the minds of a notable portion of the community. However, there appears to be acceptance of the validity of the projections amongst approximately half those surveyed. Secondly the nature of the water issues raised by surveyed residents tends to indicate that the previous water infrastructure development has generated water supply based problems in the communities local to that development.

In the following section, Section 4.2, the effects of previous water infrastructure development on the communities of Calliope Shire will be assessed in more detail in terms of the perceived benefits and costs associated with that development.

4.2 Effects of Awoonga Dam Construction and 1984 Upgrade

Effects on Respondents

Given the distribution of the *Community Survey* (Appendix C) it was expected that approximately half of the residents who responded (54%) stated that they had experienced no effects (positive or negative) of the Awoonga Dam construction or subsequent upgrades. The range of responses which fell within this category were ; 'no', 'none', 'not personally' and 'not in my area'.

The positive effects (Table 4.2a) and negative effects (Table 4.2b) of the construction and/or upgrade of Awoonga Dam on respondents are listed below. The order in which the effects are listed in each Table indicates how common the response was with the more common responses listed first.

Table 4.2a
Positive effects of the existing Awoonga Dam for survey respondents

Gain of water sport and recreation area at Lake Awoonga
Increased water supply and quality
Increased job opportunities, employment gained
Better roads below the Dam
Increased service provision

The provision of a substantial recreation resource in the form of Lake Awoonga, was the most commonly stated benefit associated with / resulting from previous water infrastructure development in the region.

Some respondents indicated that they had gained directly from these developments through employment opportunities which arose during construction phases or in industry which has established as a result of the water supply. Other benefits stated included improved water supply and quality to some properties, and improved roads in the immediate area of the development and improved services.

Table 4.2b
Negative effects of the existing Awoonga Dam as stated by survey respondents

Loss of fish from Boyne River and reduced recreational and commercial catches
Siltation of water holes and general supply in the Boyne River
Increased personal stress during construction phase (increased traffic accidents and interpersonal violence)
Lack of service provision to the Boyne Valley since initial construction of Awoonga Dam till present (particularly the condition of the Gladstone-Monto Rd.
Increased frequency and duration of local flooding
Poor or late compensation for resumed landholders
Reduced local access, less route ways
Observed change in local flora and fauna
Loss of social network, local friends due to resumption and relocation
Reduced recreation amenity of the Boyne River
Reduced River flows in the Boyne
Construction jobs went to non-locals

number of respondents (Table 4.2a and 4.2b) n=221. Mean responses=1.2

Respondents stated a greater diversity of responses concerning negative effects of previous water development (Table 4.2b) with loss of fish from the Boyne River (reductions in recreational and commercial catches), being the most common. This was a particularly important consequence for communities in the Boyne Valley who derived a source of recreation and supplemented their diet from these stocks. Respondents also stated that the commercial fishing industry has suffered considerably as a result of Dam construction. There is also a belief that the loss of fish from the river system is associated with increased siltation, proliferation of weeds in the watercourse and general decline in water quality and river health which are also believed linked to the construction of Awoonga Dam.

The provision of well-equipped recreational areas at Lake Awoonga was felt not to replace the reduction or outright loss of local recreation amenity provided by the Boyne River for the communities of the Boyne Valley. This was largely due to the benefits of property or local area based natural recreation areas in terms of proximity and accessibility. This was strongly reflected during interviews with Boyne Valley residents. Respondents downstream of Awoonga Dam also experienced loss of recreation amenity as a result of construction. This was seen to happen through reduced river levels and the diminished aesthetic qualities of the lower Boyne River.

Previous dam development has also had several negative effects on aspects of personal relationships within the communities concerned. Associated with the resumption and subsequent relocation of a number of individuals and families from the now inundated areas, was a perceived loss of local social networks and friends from affected areas. During the construction period some respondents indicated an increase in individual and general community stress levels and in some cases incidents of violence occurred within the community. An increase in local traffic levels and possibly the introduction of non-local construction labour into communities experiencing major change, contributed to the stressful environment.

Other issues stated by survey respondents such as late and inadequate compensation, increased local flooding and reduced access in the local area and on properties appear to have contributed to a belief amongst sections of the community that Awoonga Dam has provided no benefits to the local people.

Effects of previous Awoonga Dam development on respondent - Interviews

Four major effects or groups of effects emerged from interviews with residents. Residents in the Mt Larcom, Calliope area generally indicated they were not affected by the previous development due to their location in a different catchment. The main areas of effect are presented below.

- Changes in the physical, ecological and aesthetic character of the Boyne River were recurring effects noted by residents particularly with reference to the loss of 'healthy' river ecosystems and 'natural' recreation areas. Loss of mullet from the Boyne River, increase in weed infestation in water ways and silt levels were stated as negative effects of Awoonga Dam construction.
- Some residents noted changes in local government sector and service provision associated with Awoonga dam development, including major increases in rates associated with urbanisation; changes in rural/urban representation on local council and a decline in council affinity with rural producers.

- Project generated long-term uncertainty for the communities of the Boyne Valley (including self) since the 1964 construction – producing a series of ‘unknowns’ including the timing and extent of further proposals.
- Resumption and relocation of people from the district (including many friends, neighbours and families) resulting in the isolation of remaining community members and those who relocated to urban areas.

Unlike the survey responses none of the residents interviewed indicated any personal beneficial effects of the Awoonga Dam development.

Effects on other members of the community as stated by respondents

Some 63% of respondents stated that other members of the community had been affected in some way by construction or upgrade of Awoonga Dam. This compares with the 46 % of survey respondents who indicated they had been directly affected by the previous developments. This suggests that a broader awareness exists within the community, of the effects of previous development that extends beyond those actually affected. There was also a further 16 % of respondents who ‘did not know’ if other members of the community had been affected as they were relatively recent arrivals to the area.

Table 4.3a presents the positive effects of the development of the existing Awoonga Dam on other members of the community as stated by survey respondents.

Table 4.3a
Positive effects of existing Awoonga Dam on other members of community as stated by respondents.

Industrial growth benefiting the Gladstone Area
Short term employment during construction phase
Broader employment opportunities generated by development
Provided boost to local economy
Improved water quality /supply to properties and towns
Provided local recreation area (Lake Awoonga)

It is important to note that the most commonly reported benefit by respondents ‘Industrial growth benefiting the Gladstone area,’ is specifically focused outside the communities of Calliope Shire. In this respect residents of Calliope Shire believe that Gladstone based industry were the primary beneficiary from the existing Awoonga Dam. A number of residents also stated that short-term employment generation within the local area occurred during construction phases and some broader employment opportunities were stimulated by the construction of the Awoonga Dam.

Some respondents stated that the development resulted in a boost of the ‘local’ economy. It appears however this was ‘localised’ since the communities in the rural sectors of Calliope Shire have, by residents accounts, experienced decline since the initial period of construction. Some evidence in Section 3.0 suggests that during the upgrade period of Awoonga Dam in the early to mid 1980’s school enrolments across the Shire and general population trends experienced a notable and in most cases short lived increase.

Certain areas of Calliope Shire appear to have benefited through improved water supply and quality, and the provision of recreation areas at Lake Awoonga.

Table 4.3b below, displays the negative effects of the existing Awoonga Dam on other members of the community as stated by survey respondents. The most common effects stated by respondents included firstly, the displacement or relocation of local landholders as a result of inundation with the loss of viable properties, and secondly, the negative impact of Awoonga Dam on the recreational and commercial fishing sectors and a decline in the associated service industries.

Respondents stated that quality of life had been diminished for other residents and that a loss of heritage was experienced by a number of families. In contrast to statements in Table 4.3a, respondents stated that local business and productivity declined as a result of Awoonga dam and reduced quantity and quality of water supply was experienced. It was also stated that since the initial construction of Awoonga dam, uncertainty has existed in the Boyne Valley communities. Poor provision of services, particularly roads, to the rural communities in the Boyne valley was also believed to be a consequence of the previous development.

Table 4.3b
Negative effects of existing Awoonga Dam on other members of community as stated by respondents.

Inundation resulting in relocation/displacement of local landholders
Negative impacts on recreational and commercial fisherman and associated service industries
Diminished quality of life for local residents, loss of heritage
Decline in local business/ community/productivity
Generated uncertainty for the community
Uncertainty for Boyne valley residents
Inadequate service provision, rural communities ignored, Dam has 'justified' lack of service provision to the Boyne Valley
Reduced quality and quantity of downstream water
Increased salinity in Boyne has impacted on irrigators

n=207

mean responses=1.4

Table 4.4
Response of surveyed residents to the statement "residents of the Boyne valley have received very little benefit from the existing Awoonga Dam"

Respondents	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Women	35	24	16	3	3	19
Men	23	29	12	12	6	20
Primary producers	43	26	7	6	3	15
Other — non-prof	19	28	14	13	7	20
Professional	21	28	21	3	0	28
Retired	18	21	11	11	4	36
Total respondents	26	27	12	9	5	21
%						

n=259

From Table 4.4, it appears there is very strong sentiment within the broader community that the residents of the Boyne Valley have received few benefits from the construction of the existing Awoonga Dam on the Boyne River. This feeling is particularly evident amongst primary producers. Also the number of respondents who did not know were relatively high.

Effects on other members of the community as perceived by respondents– Interviews

The views expressed during the interviews regarding the effects of the Awoonga Dam on other members of the community as apart from the respondent themselves, generally reflect the effects stated in the survey responses above.

- Major effects on the commercial and recreational fishing sectors, reduction in catches hence viability, decline in stocks and diversity in Boyne River and estuaries. Declining water quality and flows.
- Aware of many landholders losing part or all of their properties with inundation, loss of houses, forced relocation / resumption – major negative impact on local economy at time, due to primary production focus.
- Industrial growth and related increased standard of living, improved water supply and services for Gladstone population. Some increased service provision in urban centre of Calliope, but no overall benefit for Calliope residents.
- Some residents in Boyne Valley benefited from access to water supply for irrigation
- Prolonged uncertainty in Boyne Valley communities, increasing community disruption.

Below are a number of quotations extracted from the *Community Survey* which give an indication of the nature of the responses received from residents regarding the effects of previous water infrastructure development in the region.

“Our area received some benefit from the construction of the Awoonga Dam, particularly a better road and water supplied to the residents along the pipe line.”

“The existing water supply has made it possible for the industry that employs me, to operate in Gladstone. Without these industries in this area, Gladstone would not be the city it is today.”

“I was born & raised on my father’s property on the Boyne River, we lost our property and had to relocate (and) find other means of living on what was only a portion of what the property was really worth”

“Boyne Valley road is flooded for much longer periods after floods. The floodwater takes much longer to recede since the dam was built.”

“my parents have a property on the Boyne & I grew up there, I remember life before the dam and the changes up to present day... weed growth & silting up of the river now having (a) negative effect, fishing in the river is poor now (I do appreciate that there are more people fishing now, but the variety of species of fish has decreased”

“...pleasant picnic area for families; Gladstone water quality has improved; the Gladstone power station Boyne Smelters etc expanded as a result of water...”

“The way our family has been most affected is now having a lovely recreational area to enjoy at Awoonga dam.”

“... everyone who lives in the Boyne Valley or who travels on the G’ston-Monto road has been affected. We have been in limbo. Everyone who enjoyed a walk along the river or creeks and enjoyed the sight of fish and other aquatic life, have had the quality of their life diminished”

Section 4.0 Review

The construction of Awoonga Dam had been the most prominent water issue in the region in the minds of residents of Calliope Shire. Other prominent water issues included declining

water supply to some localities and townships, conflict over underground water supplies, rainfall variability and drought.

Boyne Valley residents indicated that the distribution of, access to and cost of water to the various users in the region was inequitable and that previous water infrastructure development, namely Awoonga Dam has contributed to these circumstances. Issues relating to viability of the proposed Castle Hope Dam in terms of the proposal's economic and environmental sustainability were foremost in the minds of Calliope Valley residents.

About half the residents surveyed perceived a need for increased water supply to the region. Identifiable sections of the community, primary producers and professionals, tended to disagree and believed that projected demands for the region were over-stated. It appears that the addition of further water infrastructure development cannot be justified in the minds of a notable portion of the community.

Approximately half the residents surveyed and all of those interviewed in the Boyne Valley indicated they had been personally affected in some way by the construction and subsequent upgrades of Awoonga Dam. The major personal impacts identified were:

1. Changes in physical ecological and aesthetic attributes of the Boyne River - a perceived loss of a 'healthy' river and 'natural' recreation areas involving the loss of native fish populations, siltation, weed infestation, reduced flows, reduced local recreation amenity and increased frequency and duration of local flooding.
2. Impacts on community services such as delayed and inadequate provision of transport infrastructure and social support services to residents of the Boyne Valley, and, a shift from the traditional rural production and local government, with rural priorities and representation changing to an urban-industrial based economy and focus.
3. Long term uncertainty for local residents.
4. Decline in community structure and social networks associated with land resumption due to inundation and the relocation of community members from the district.
5. Improved provision of some services - recreation area at Lake Awoonga, improved water supply and quality to some residents and some indication of direct and indirect employment generation from construction.

Industrial growth benefiting the Gladstone area and associated economic and employment opportunities in the eastern sector of the Shire were perceived as the main positive impact on 'other' members of the community. Major negative impacts on 'other' community members were perceived as involving displacement of local residents, impacts on commercial and recreational fishing industries and decline in local communities' productivity, businesses and quality of life.

It appears that previous water infrastructure development in the region is generally associated with negative changes in the communities and personal circumstances of many residents. It also appears that the negative impacts ascribed to the proposal by residents are concentrated within the smaller rural localities and communities of Calliope Shire and particularly in the Boyne Valley. Benefits arising from previous developments appear associated primarily with the urbanised sector of the Calliope Shire community and the residents and industries of the Gladstone area.

The following section, Section 5.0, will detail the impacts of the current proposals of the Gladstone Area Water Board - upgrade of the Awoonga Dam and Castle Hope Dam construction on the Calliope River - as identified through consultation with the community and other stakeholders in the development.

Section 5.0

Impacts of current proposals: Awoonga Dam Upgrade and Castle Hope Dam on the Calliope River

Introduction

This section intends to identify and discuss the potential and present social impacts (positive and negative) of the Gladstone Area Water Board's proposals to upgrade the existing Awoonga Dam on the Boyne River and construct a new Dam on the Calliope River at Castle Hope. These proposals are outlined in detail in Section 1.1 of this report. The potential impacts of these proposals identified by the Water Board in the 1996 *Water Supply Source Options* study, are presented in Section 1.3 of this report.

For the purpose of this impact assessment it has been assumed that the proposed inundation levels will result from an elevation of 53.5 metres (FSL EL 53.5) for the Awoonga Dam Upgrade and an elevation of 35.0 metres (FSL EL 35.0) for the Castle Hope Dam on the Calliope River. Impacts will therefore be assessed in this physical context.

The two proposed developments will be discussed individually in respect of their impacts on the communities involved (Sections 5.1 and 5.2). Section 5.3 outlines the effects of the current proposals (with some reference to previous development) as perceived by regional industries, community and producer groups and government agencies and other bodies.

In sections 5.1 and 5.2 due to the amount and diversity of responses received from the community regarding the impacts associated with the proposed upgrade the Awoonga Dam and construction of Castle Hope Dam, the information will be presented in a different format than in previous sections. In order to identify the principle impacts in a coherent manner, the information gathered will be presented according in general issue-based areas. The tabulated form of survey data relating to this section, which has been omitted for reasons of coherency, is presented in Appendix D.

5.1 Impacts of Awoonga Dam Upgrade

The major impacts of the proposed Awoonga Upgrade, as stated by residents of Calliope Shire, relate to the following issues listed below;

1. Access issues
2. Loss of property through inundation
3. Uncertainty
4. Local community and economic issues
5. Community social issues
6. Recreation and Tourism
7. Equity issues
8. Regional community and economic issues

Of the survey population 57 % stated that they would not be affected, or would experience minimal effect by the proposal to upgrade Awoonga Dam. Information gained during personal interviews with residents of the area has also been incorporated at the relevant stages (as in previous sections) and is identified as such.

1. Access Issues

Community survey respondents noted that a positive benefit of the upgrade would be the subsequent upgrade of the Gladstone – Monto Road (<5%). However the most prominent personal concern evident in the survey responses, was reduced access for residents resulting from the upgrade (21%). This involved decreased access to their properties and general local areas, longer travel distances and prolonged flooding of local roads. The disruption associated with the timing and nature of the Gladstone –Monto Road relocation would result in increased travel time to work, increased distances to major markets for producers, increased operating costs and reduced access to services in the urban centres.

Survey respondents also identified other community members would be subject to access problems, particularly, properties along the Boyne River would be disrupted due to the relocation of rail and road infrastructure (11%). The Gladstone Monto Rd upgrade following construction was also seen as a benefit for other members of the community by a small number of respondents (<2%).

Interviews with residents also revealed issues relating to access.

Boyne Valley residents stated several negative effects of the Awoonga upgrade proposal, which were access related:

- Road relocation would result in disruption of producers transporting stock by semi – trailer and concerns over the site and suitability of new road for heavy traffic including timber trucks.
- Gladstone-Monto Road ‘is the one thing that connects the Boyne Valley communities’. Relocation will therefore disrupt general access to town, limit social contact between residents and possibly affect the monthly visits of the Anglican and Catholic priests to the area.
- Concerns that the new road will be of lower quality, i.e. unsurfaced and new road and rail still subject to inundation.
- Bridge to be constructed over Futter Creek and road relocation will adversely effect cattle migration of neighbouring properties, producing mustering and fencing problems.
- Rail relocation may affect the future viability of industries such as Monto Minerals.

Calliope Valley residents indicated that relocation of transport infrastructure in the Boyne Valley would adversely affect surrounding landholders.

2. Loss of property through inundation

The loss of what was considered the ‘most productive and valuable land’, due to inundation from the proposed Awoonga upgrade, was the second most prominent impact with (18%) of **Community Survey respondents** stating they would be personally affected. This also includes landholders that would face resumption of their properties. A further small number of respondents (<4%) indicated that their properties would be inundated by the proposal but stated that they were retiring, so the effect was lessened.

There appears to be a broad awareness that inundation will effect other members of the community with 46% of respondents indicating that graziers, irrigators and the community will loose 'valuable', 'flat' and 'productive land' to inundation with many respondents indicating related loss of income.

Inundation of property was also discussed widely during **interviews with residents** of Calliope Shire.

The views of **Boyne Valley residents** interviewed included:

- Objections that best remaining land in the valley/ district will be lost to inundation.
- Land in Nagoorin to be inundated under the proposal is the river flats area used for fattening and finishing cattle.
- Belief that area has good soils compared to the Calliope catchment.
- Loss of farm buildings, infrastructure in proposed inundation area – affect viability of family members' property.
- Inundation of property would mean having to relocate probably to town (Calliope) – unhappy about having to relocate because of the years of hard work and investment in infrastructure for the property.
- Inundation of house which has personal and historical value.
- As they desired to leave the district, one resident stated that resumption of their property would be a positive effect.
- Due to the extent of proposed inundation, residents also indicated that neighbouring grazing properties would no longer be viable.

There was feelings also expressed during the interviews that those not directly affected by the proposal are not otherwise effected. This sentiment was also evident during preliminary consultation. In order to assess the validity or extent of this sentiment, Community Survey respondents were asked to indicate their level of agreement with the statement, "upgrading the Awoonga Dam would have few impacts on those landholders that were not flooded". The results are summarised below in Table 5.1.

Table 5.1

Surveyed response to "upgrading the Awoonga Dam would have few impacts on those landholders who were not flooded"

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't know %
Total Respondents	10	36	10	21	12	11
n=263						

Table 5.1 shows that opinion is divided in the community regarding the extent of impacts associated with inundation from the Awoonga upgrade. It does indicate however that a notable portion of the respondents believe, that effects of inundation extend beyond those who are flooded. It is suggested that a number of those who agree only inundated landholders will be affected, are from the urban residential areas such as Calliope township, being somewhat detached from the mainly rural inundation areas.

Calliope Valley residents stated that people (landholders) in the Boyne Valley would be forced to relocate as a result of inundation of their properties.

3. Uncertainty

The third most common effect of the Awoonga Upgrade reported by 13% of **survey respondents**, was the ‘uncertainty’ over the extent of water levels on their (landholders’) properties resulting from the proposed inundation. The uncertainty experienced by landholders is understandable, given that at the time of survey distribution, several landholders were still uninformed as to the extent of the inundation levels on their properties, despite the proposed strategy of the Gladstone Area Water Board having been defined for a period of over twelve months.

The **interviews** with residents reflected that uncertainty within the community occurs at different levels.

Residents of the **Boyne Valley** interviewed, indicated several ways in which the uncertainty generated by previous development and the current proposal to upgrade Awoonga Dam has affected them. Some examples are presented here.

- The recent proposal to upgrade Awoonga Dam is seen as a continuation of long term uncertainty for residents of the Boyne Valley described by one resident as ‘a cloud of uncertainty extending over the last 5-10 years and into the next 5-10 years’. For some residents though this long-term uncertainty has been present since initial construction of Awoonga Dam.
- Some concerns focused on uncertainty over the future condition of relocated roads and the possibility of increased flooding. Other residents spoke of the uncertainty associated with the future viability of extractive industries in the area such as Monto Minerals, oil shale deposits and Taragoolla limestone quarries.
- Uncertainty over the likelihood, timing and extent of the proposal was generating ‘frustration and indecision’ with property management and planning amongst many interviewed landholders. Having the Awoonga upgrade proposal ‘hanging over their heads’ meant landholders were having to constantly re-evaluate their circumstances, plans and projects. It was stated that to stay motivated about pasture improvement or maintaining fences was becoming increasingly difficult, was deflating and emotionally stressful for landholders. One landholder had made a recent purchase of adjacent grazing land and was now unsure of the extent of inundation on both new and existing properties.
- It was noted that rumors circulating within the community were contributing to the uncertainty by either generating a false sense of security or by increasing anxiety for individuals and the wider community.
- There is also the feeling that ‘nobody in the district knows what will happen’ and that conjecture and the ‘unmade decision’ is preventing people from ‘getting on with their lives’.
- One resident stated that as the proposal contributes to the uncertainty of the area’s future, they would not be encouraging their children back onto the land.

A **Calliope Valley** resident noted the possibility of the Awoonga upgrade becoming the priority development rather than dam construction at the Castle Hope site on the Calliope River as is indicated in the Water Board’s *Preferred Strategy*. It was felt that this would result in a prolonged waiting period for affected residents and more uncertainty, which was felt unacceptable. Residents of the Calliope Valley also noted, that a high degree of uncertainty was present in the Boyne Valley communities.

4. Local community and economic issues

Improved water access and supply for irrigation and domestic needs was the most commonly stated personal benefit of the Awoonga upgrade proposal by respondents (13%) in the

Community Survey. Employment generation for themselves and/or their children resulting from development associated with the proposal was also stated by 9% of respondents. Other positive effects of the proposal as perceived by respondents include; indirect benefits from an improved and revitalised local economy (8%) and increased land values.

Some negative personal effects of the Awoonga upgrade proposal relating to the local economy included an increase in rates and water costs (6%), decreased local food production levels and declining viability and productivity of properties. Some respondents stated their jobs would be lost with the inundation of Taragoola limestone quarry.

A number of respondents also cited a reduction in the value of their property, which contrasts with increased land values as stated above. It is likely that this difference is related to location. Those with a significant proportion of their land to be inundated, affecting present market values and future viability, are likely to experience decreased land values. Those in the buffer zone who believe they may benefit from access to water or are considering the possibility of subdivision, feel the presence of water near their properties will increase the land value.

In response to what the effects the Awoonga Upgrade may have on **other members of the community**, aspects of the local economy were also raised. Some respondents stated that short-term employment might be generated during construction and for relocation of transport infrastructure (5%). A small number of respondents indicated there would be some benefits to remaining farmers from improved access to water. Negative effects for others in the community included the belief that a loss of jobs and industrial limestone supply at the Taragoola quarry would result and the loss of jobs for those who labour on rural properties. A decline in rural communities was also stated as a general effect of the proposal as was a loss of quality of life and increased safety risk of residents below the dam wall. The reduced viability of the commercial fishing industry was also stated as a potential consequence.

During the **interviews** residents discussed several aspects of the local community and local economy which would be affected by the Awoonga upgrade proposal. Those effects perceived by residents of the **Boyne Valley** are outlined below.

- Landholders had lost private offers of sale on their property from independent buyers due to road relocation through sections of property.
- Reduction of some landholders leases in the proposed inundation area or adjacent to it from 15 year to 5-year leases was seen as a concern.
- Severe dislocation of rural business was seen by many residents interviewed as a major impact of the proposal resulting in the viability of many local operations unable to be maintained.
- The more land that is inundated in the district the more the local population declines and consequently the demand for local services is diminished and town (Calliope) suffers.
- Some landholders indicated that they were considering a leaseback agreement with the Gladstone Area Water Board for their properties, this was viewed as a favourable option by some landholders and unattractive to others.
- Inundation will see the loss of natural (400-year-old stands of riverine Blue gums) and cultural heritage features (historic houses) to the area with scientific, cultural and potential tourism values.
- Some residents interviewed stated that a benefit of the proposals would be the provision of improved water supply, which could increase the irrigation potential on their property.
- Belief that a ‘flow on’ of capital works for the Boyne Valley will eventuate if Awoonga upgrade proposal occurs improving the status of the community, roads and water supply.

A **Calliope resident** noted that taxpayers are indirectly affected since public funds are used for the expansion and beautification of Lake Awoonga facilities when the area is to be flooded with the proposed upgrade.

5. Community social issues

Effects of the Awoonga upgrade proposal on the social structure of the community, as such, were not reported by respondents of the *Community Survey*. However, during the **interviews** conducted with residents of the affected areas, social issues relating to family and personal circumstances were raised widely. In this case the value of personal interviews in gathering information on these types of issues, as opposed to the mail survey, was well demonstrated.

- Visible distress was evident amongst a number of landholders interviewed with the prospect of proposed upgrade perceived as the “last straw” for producers dealing with hardships associated with the drought – and being “just one more thing to worry about”.
- Some residents reported evidence of a degree of animosity between community members regarding differing support for the proposals but did not believe it was widespread.
- A belief was also stated that water infrastructure proposals are accelerating the rate of social change in the communities of the Boyne Valley. This change was difficult to comprehend for many community members and even more difficult to deal with.
- The ‘flow-on’ effects of recent resumption of land by the Gladstone Area Water Board had affected the closeness of the community in the Nagoorin section of the Boyne Valley. An example given involved the recent relocation of three local families with young children of a similar age to the respondent's own young children. Being the only other local children in this age group, the respondent expressed concern about the diminished opportunities for friendship groups and other opportunities for interaction.
- There was also a concern that the proposal was contributing to a ‘dislocation of the community’ including a loss of local schools affecting education continuity and opportunities for local children. The possibility of losing local children to boarding schools as a result was not perceived a desirable option.
- Relocation of people from the Boyne Valley will significantly affect the viability and future of local schools (Nagoorin, Ubobo, Builyan), impacting upon the education services available to the community after the proposal.
- One resident indicated that he would have to seek alternative employment if forced to relocate from his property due to resumption of land. Without formalised skills or documentation the likelihood of gaining employment was believed low.
- The loss of the ‘family property’ or ‘family home’ through inundation, was also a major concern to landholders particularly if the property had been in the family for a number of generations. Some landholders indicated that the property served an important function as the ‘hub’ of family social activities, particularly for family members no longer living on the property.

6. Recreation and Tourism issues

Given that issues relating to recreation were prominent in terms of the effects of Awoonga construction and 1984 upgrade (see Section 4.2) and appear to be on the local agenda, it is important to present the potential impacts of the proposed upgrade on recreation and tourism in the local communities.

Community Survey respondents stated that increased recreation opportunities would result from the proposed development (7%). This tended to focus on Lake Awoonga type recreation opportunities. However, some respondents believed that a loss of recreation amenity and facilities would result on both the Boyne River and Lake Awoonga (4%). It was also stated

that the resulting growth in recreation and Tourism potential of Boyne Valley would improve local business opportunities (5%).

Interviews

- A number of Boyne Valley residents stated those major tributary areas of the Boyne River, such as Diglum and Futter Creeks, were of notable aesthetic value, and hence recreation value, would be lost with inundation. It was these areas which served as important informal recreation areas for landholders and the local community. It was also expressed that these natural creek areas could have important tourism value for the area and were underrated.
- It was also stated that an upgrade of the Awoonga Dam would cause a further loss of fish and recreational fishing opportunities in the Boyne River associated with decline in water quality and river health.
- Other residents stated that the incorporation of a fish ladder into the proposed upgrade might increase recreational fishing potential of the River.
- It was also stated by one resident that the ‘flow on’ of economic benefits resulting from the Awoonga upgrade, could be used to establish and promote the Boyne Valley and environs as a tourism and eco-tourism destination for the region. This would include drawing on and increasing the profile of areas such as Kroombit Tops and Mt Castletower National Parks. Increased tourism, it was believed would provide a new industry for the Boyne Valley and contribute to the economic renewal of the local communities. An upgrading of the Gladstone-Monto Road following relocation it was stated, would allow improved access for increased tourist numbers.

7. Equity Issues

Issues of equity associated with the proposed upgrade were raised in the *Community survey* and during the interviews with residents.

Survey respondents stated that the inequity of water costs and increase in rates associated with previous and the proposed development is affecting and will continue to adversely affect the aged and other low income earners in the community (4%). It was also stated that Gladstone-based industry would benefit from the proposal at the expense of the local communities.

Interviews

- Feelings were expressed by Boyne Valley residents that the “greater public interest”, that is the dam proposals, appears to override the individuals interests be they primary producers or others.
- Some residents stated that they believed regional wealth generated by the industrial growth from the proposals would not translate into investment in local social, support and education services and infrastructure.
- There is a fairly widespread concern that access to, and use of the improved water supplies, by local residents will be inequitable. For example, it was stated, irrigators outside affected area will receive access and economic benefits where no such benefits will be available for those upstream of Nagoorin. (Refer to Section 4.1 *water issues* regarding perceived inequity of access and distribution.)

8. Regional community and economic issues

Issues were raised by *Community Survey* respondents and residents during interviews, which are concerned with impacts of the proposed Awoonga upgrade on community and economy at a broad or regional scale.

In terms of positive regional outcomes of the proposal **survey respondents** believed Gladstone industry would benefit from the improved water supply (10%), that the development would be positive for other sectors of the community generally (5%) and that industrial growth would benefit the community (<2%). Some respondents believe the proposal will relieve conflict over underground water supply in region.

A notable proportion of respondents (10%) indicated they were concerned about the safety of the upgrade proposal generally for two reasons; firstly the present instability of the existing dam wall, and secondly the likelihood of increased flooding intensity and regularity in urban areas below the dam wall. Lower areas of Calliope Valley, it was stated, were also susceptible to increased flooding following heavy rain. More restrictions on land use in the Boyne catchment area was also cited as a negative effect of the proposal by a small number of respondents. Other broad scale concerns included contamination of the water supply through flooding old mining areas, loss of potential mineral resources to the region through inundation, and, the continuation of inefficient water use practices by urban residents and industry.

Calliope and Boyne Valley residents during **interviews** stated several regional issues.

- Concerns regarding the structural stability of proposed upgrade on present dam wall, and hence the safety of communities below dam wall (such as the Boyne Tannum area) in the event of a major flow (similar to 1947 event).
- Loss of potential and current mineral resources in the region due to inundation. Belief that, if affected, industry such as Taragoola limestone quarry would have to be compensated by government.
- High levels of expenditure needed to relocate transport infrastructure in the Boyne Valley.
- Environmental concerns - increased siltation and pollution in the Boyne River would result with an increasing need for dredging behind the dam wall.
- Possibility of amalgamation of local shires in areas dissected by inundation.
- Increased regional irrigation potential with water supply providing economic benefits to irrigators in other areas.

5.2 Impacts of the proposed dam construction at Castle Hope on the Calliope River

This section, 5.2, will present the potential social impacts of the proposed dam development on the Calliope River at Castle Hope to an elevation of 35.0 metres (FSL EL 35.0). The information obtained during interviews with residents of the Calliope Shire and through the *Community Survey* is presented here in broad issue-based areas as in the previous section 5.1. Due to the differences in the content of the information, the 'issue areas' differ slightly from those in previous section.

These areas are:

1. Access and inundation issues
2. Land, infrastructure and inundation
3. Uncertainty
4. Local community and economic issues
5. Personal social issues
6. Community social issues – structure, networks and cohesion
7. Recreation and tourism
8. Regional community and economic issues

Percentages indicate the proportion of respondents who stated a particular issue or effect of the proposal and should not be interpreted as the indicator of the significance of the impact but only its commonness in the survey responses.

Of those residents who responded to the community survey, 32% believed they would not be affected by the Castle Hope proposal since they did not live in that area of the Shire (Calliope River catchment). A further 6% stated they would not be *directly* affected or did not know. Some respondents said they needed more information to comment (3%), while others indicated that other members of their community would be affected but did not specify in what ways (10%).

1. Access and inundation issues

Issues relating to access and the impacts of inundation on access were reported in the responses from the *Community Survey*. A number of respondents stated that a loss of access on local and property routeways would result with some indicating increased freight due to the proposed inundation. Access to stock and migration of stock would also be affected (6%).

Major local access problems associated with the inundation and relocation of the Bruce and Dawson Highways were stated as an impact on the general community (6%). The redevelopment (improvement) of the Moura rail link and Dawson Highway was stated by one respondent as a benefit of the proposal.

Interviews with Calliope Valley residents

- One resident stated the proposal would affect his property and local access through half to two-thirds of property being inundated. Several other residents indicated that the remaining areas on their properties following construction would be made more difficult to access.
- A number of graziers stated that the access of cattle throughout property, particularly during flood periods would be problematic.
- One resident indicated that water backing up Mt Larcom Creek as a result of the project will cut-off 800 acres of his property.
- Relocation of the Bruce Highway was the main concern of one grazier as it would bisect the property along its full 6.4 km width affecting the movement of cattle and would effectively result in having to run one property as two separate ones.
- An increase in the transport costs of grain and hay were expected due to the shorter of the two access roads to Biloela being cut.

2. Land, infrastructure and inundation

A large number of respondents to the **Community Survey** (31%) stated that landholders in the district would be affected through inundation, resulting in relocation, access problems and the loss of valuable or productive land. Ten percent of respondents indicated they would personally lose all or a portion of their property, largely referred to as the ‘best land’ which would effect the viability of their business. A further number indicated property viability would be affected by resumption of land for relocation of transport infrastructure.

The information presented below outlines issues relating to inundation gathered largely during **interviews with landholders** in or adjacent to the proposed Castle Hope inundation area.

- Properties adjacent to the proposed inundation area currently experience natural inundation for up to 2-3 days during large flood events. Concerns are that the proposed Castle Hope Dam will impede the draining of this water, potentially damaging pastures. Graziers would ‘be left with’ the hills for grazing resulting in the property no longer being viable and they would have to ‘walk off’.
- Inundation of ‘best land’, ‘lower flats’ leaving only ‘higher’, ‘harder, less productive country’, residents widely expressed that inundation of these ‘good cattle grazing areas’ would ‘be a shame’ and would ‘cut production in half at least’ in some cases. Several graziers also stated that the remaining property after inundation would not be viable, as boundary areas of the new water level would be bare dirt with no grass re-growth.
- Some landholders indicated that construction of new yards and ongoing fencing costs associated with stock access to the water body and relocation of property boundaries would be financial costs resulting from inundation.
- A major concern expressed by several landholders was the lack of land available for purchase in the district to which they could relocate with suitable infrastructure, good house setting or flat land. There were also sentiments that they would not find another property similar to the present property with good proximity to markets and generally good rainfall. It was also stated that ‘relocation means ending up trying to make the “best situation” out of the least inconvenient location’. An indication of the extent of this belief in the wider community is illustrated below in Table 5.2 with approximately two-thirds of the respondents indicating that replacement properties are not readily available.

Table 5.2
Surveyed response to “few opportunities exist for people displaced by dams to find similar land to the land they have lost”

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't know %
Total Respondents	28	35	7	17	7	7
n=262						

- Some landholders expressed concerns regarding the ‘question of ownership’ of their property and house if that house is within the proposed 200m buffer zone adjacent to inundation.
- There were views of concern expressed that the proposal would result in the inundation of the major stations in area such as “Wycheproof” and “Calliope Station” which fill an important role in the local grazing community.

There were also views that only those grazing properties inundated would be directly affected by the proposal. This implies an assumption that impacts of the proposed in the area are restricted to those properties. Apparently the view amongst other community members on this

issue is somewhat divided (as displayed in Table 5.3) with disagreement evident as to the extent of impacts in the community.

Table 5.3

Surveyed response to “a dam on the Calliope River would have few impacts on those landholders who were not flooded”

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't know %
Total respondents n=263	10	35	8	22	14	10

3. Uncertainty

Several aspects of uncertainty regarding the proposal were evident in the responses to the *Community Survey*. This involved uncertainty over proposed water levels, the extent of property inundation and the possibility of relocation. Uncertainty over the supply of water to properties for pumping and accessibility to stock were also stated. (6%)

Uncertainty generated by the Castle Hope construction proposal for members of the local community was very evident in the **interviews**.

- Uncertainty over the timing and scale of the development, particularly water levels (proposed and possible future) was widely stated. This information was required for both short term and long term planning. An example of this is one landholder who does not know whether he is likely to “benefit or suffer” from the proposal since the Gladstone Area Water Board has not provided information on inundation levels. As the property will only be affected by highest level scenario (FSL EL 35.0m), the whole operation is “up in the air”. Yet still having to get on with work and the options “not clear cut”.
- Several residents stated that their personal future prospects and the viability of their operation was uncertain with a number of landholders expressing a desire to “get on with (their) lives”
- It was also indicated that even if the Castle Hope proposal were “put-off”, the possibility of construction would “still hang over their heads.”
- One landholder having undertaken pasture-seeding trials with the Department of Primary Industry since 1986, requiring a large financial outlay, has a desire to see outcomes of the trials and continue further trials. Due to the proposal however, unsure of the worth of previous and proposed trials and the expenditure required.
- Residents stated they were used to fluctuations in cattle prices and were in the business for the long run, but were extremely “frustrated at being in limbo” with the proposals. Residents felt at a loss to know how much effort should be put into upgrading houses and continuing with their general property maintenance.
- Residents generally expressed the desire for a decision from the Gladstone Area Water Board to allow property planning to continue and financial decisions to be made.
- It was also stated that the general uncertainty generated by the proposal has translated into the broader local communities and was having an adverse impact.

4. Local community and economic issues

A diversity of issues were raised in the *Community Survey* which could be understood to effect the operation of local communities including their local economy. In these terms, respondents perceived positive benefits for themselves including: prolonging present

employment or the generation of employment (3%); compensation for property above market value may be a positive result for some landholders (2%); increased water supply for property, irrigation, stock access or domestic use (6%) and an increase in local property values (3%). Benefits for other members of the community were stated as; short term employment generation in construction and service provision to construction (9%), remaining farms benefiting from improved water supply (4%) and reduced traffic flow past residence.

Respondents stated that they would be personally affected in adverse ways by the proposal through: increased or prolonged flood levels (2%), the high cost of mains water despite close proximity of dam (2%), reduced local access to water (2%) and increased noise and traffic during construction phase. It was stated that other members of the community would be affected adversely: as there had been no previous resumption in area (6%); remaining productive farm land would be overused; concerns relating to perceived loss of local jobs including the East End quarry; effects of reduced local population on local business and the increased cost to taxpayers due to infrastructure relocation.

During the **interviews** with residents many of the issues raised in the community survey were also discussed in detail. Three main themes were evident; production issues relating to water access, local business and employment issues and river issues.

Production and water access

- A Calliope landholder on the periphery of the inundation area felt he would benefit. The landholder said that a lease back arrangement with the Gladstone Area Water Board would be a favourable outcome and that despite losing 30 acres, the possibility of an irrigation license with improved feed for stock and access of cattle to calm watering points would be overall advantageous.
- Other landholders stated that improved cattle accessibility to a water supply might result providing the Gladstone Area Water Board granted access to water. The potential to irrigate to improve pastures for cattle was indicated yet it was stated that the process of application for irrigator's license was difficult and detailed. Pumping from Catfish Creek and the Calliope River were proposed for this purpose and felt would increase productivity for some farms.
- The possibility of diversification for local producers due to available irrigation water from Castle Hope Dam was also stated.

It is important to note however that the above perceived benefits rely on the assumption that stock and/or irrigation access to the proposed water storage will be granted by the proponent.

Local business and employment

- It was indicated that the viability of some local businesses would be affected as a result of people leaving the area due to resumption, particularly those who supplement their income through contract work on neighbouring properties.
- Jobs of those who work and live as labourers on properties to be inundated will be lost. Some have worked on properties for almost 20 years –employees and their families live on the property and will have to relocate. It was felt that this was an example of 'hidden' negative impacts on the local workforce.
- In contrast to the above statements of improved productivity a number of landholders stated that the viability of remaining properties was threatened and would result in a decline of the local economy and business sector.

River issues

- It was stated that estimations by surveyors in relation to flood levels at Catfish Creek were inaccurate, did not draw on local knowledge and would have repercussions for flooding of relocated roads.
- Natural large flows, which exist in the Calliope River, when dammed, will generate increased flooding frequency in the local area.
- Concerns that the dam will change the unobstructed fish access up stream on the Calliope River affecting the movement of mullet, catfish, bream etc.

5. Personal social issues

Several aspects of people's personal and emotional circumstances have been and will be affected by the proposed development. In the *Community Survey* respondents indicated that in relocating they would be leaving their community, losing their home (5%). In doing so many stated that their quality, or 'way' of life would be reduced and they would experience a loss of their personal and family heritage in leaving their properties. Others stated that the proposal was causing personal emotional stress, affecting their family and their personal relationships financial pressures and uncertainty generated by the proposal (3%). Others stated that the loss of neighbours and friends as a result of inundation was a negative effect of the proposal.

Respondents believed that other members of the community would be adversely affected through the; disruption or loss of lifestyle (2%), loss of friends and social network through relocation (2%) and the loss of cultural heritage, old homes and family properties (2%).

Interviews

- Many residents indicated that the whole process is "painful," "stressful" or "frustrating."
- Other landholders stated that the proposal was resulting in them losing a "way of life" or the loss of the "whole lifestyle of local producers."
- A number of landholders expressed sentiments similar to this example. One landholder stated that their lifestyle would be altered, their whole life disrupted and would have to rethink their future. "If we were 20 years younger relocation may be an acceptable option but we don't wish to restart from scratch at this age now, but we're not ready to retire either."
- A number expressed anger and regret over having to leave their house and property, particularly those with a strong family tradition on that property.
- A degree of distrust was expressed by some landholders towards the proponent regarding pre-construction agreements with the Water Board.
- The problem of having to leave the local community and resettlement in a new and unfamiliar area was daunting and unattractive to some residents

6. Community social issues – structure, networks and cohesion

During the **interviews** with residents of Calliope Shire it was identified that the Castle Hope Dam proposal would have a number of adverse impacts on aspects of the structure, cohesion and social networks, which exist in the affected community.

There was a strong concern amongst residents that the inundation area consists largely of older members of the local communities. This would have a number of implications for those older members of the community and the community as a whole:

- Through the resumption and relocation of residents in the inundation area, important older members of community will be lost from the district. These people fulfil roles as local librarians/historians, church elders, leaders and members of rural groups and the rural fire brigade. This results in the deterioration of community assets and the loss of community minded people. It was stated that by pulling key figures from the community greater responsibility is placed on remaining members of community, reducing the quality of their involvement.
- It was also stated by older landholders interviewed that the uncertainty associated with relocation was a concern. Not knowing if “the new place is any good” takes a couple of years. Due to their age they believed they were less able to overcome this and “probably too old and too settled to handle a move.”

Other community impacts included:

- Co-operative relationships between adjacent landholders (often family groups) such as work-sharing, common farm infrastructure and the common management of adjacent properties would be disrupted by land purchasing by proponent (as during development of Aldoga industrial estate). It was stated that this would result in the loss of viability for remaining properties. Shared properties also provide other benefits such as childcare, transport and other support networks.
- Transport for local school children would be affected by the proposal.
- It was also stated that practices of the proponent - which some residents believe are being undertaken - such as only purchasing the smaller properties until a decision is made is causing some division in the community.
- Residents indicated that once the proposal has been announced there is a ‘disconnection’ between people and their land even prior to the actual development. This can be demoralising for landholders.
- It was also stated that “side taking” exists in community to a greater or lesser extent as does the belief that some local community groups are not interested.
- There was also a belief expressed amongst those interviewed that Castle Hope Dam will have no benefits to general local community only benefits to regional industry.
- Completion of proposal would exacerbate the present change in local community structure already evident in local children. That is, changes in social stability, values and attitudes with an ‘industrial town mentality predominating’ and a loss of a rural ethic or rural sector contribution to the community.

7. Recreation and tourism

Issues or impacts of the proposal relating specifically to recreation and tourism in the local communities were present for Castle Hope Dam, as they had been in the Boyne Valley with the Awoonga upgrade proposal. In the *Community Survey* loss of recreational amenity and value on the Calliope River (swimming holes, camping areas, fishing spots) resulting from the proposal was a common concern stated by 14% of respondents. A further 2% stated a loss of tourism and eco-tourism potential from the natural state of the present Calliope River would be lost. It was stated that the proposal would detract from existing recreational and tourist opportunities downstream of the site due to the lowering of river levels, including boat hire, the Calliope Historical Village and camping and swimming areas.

Improved recreation and fishing opportunities at new dam site was stated by 4% of respondents. It was also stated that the Castle Hope Dam project would result in the loss of available funds for tourism development in the Boyne Valley.

Interviews with residents also reflected impacts related to local recreation and tourism in the area.

- Loss of well-used and important public recreation and tourist resource in the areas adjacent to the Carrara section of old Bruce Highway used for camping picnics, swimming and fishing. Appears area has important lifestyle and sentimental value to a large number of local community members who visit every year for significant events. Residents have witnessed close to 100 vehicles on overnight stays between period of October-April.
- Construction engineering would result in the loss of a natural lagoon considered an aesthetic and recreational asset of one property and a major water supply.
- Some residents indicated the *possibility* for local tourism and recreation infrastructure for locals & visitors (including private operations by landholders) at the proposed dam site.
- Other residents believed no recreation potential existed due to the broad and shallow nature of the proposed storage.
- The permanent loss of historically significant properties and homesteads from the community through inundation, which have tourism value, has been overlooked.
- Loss of traditional local play areas for children in natural waterways of Calliope River.

8. Regional community and economic issues

Survey respondents reported several issues, which are considered significant at a regional level. This group of issues or perceived impacts tended to constitute a large proportion of responses, that is were the more common responses within the survey. Concerns of an environmental nature including the destruction of fish habitat, siltation of waterways, restricted ecological flows, increased pollution with industrial growth and the loss of the Calliope River as an environmental resource to community, was stated as a personal effect of the proposal by 14% of respondents and an affect on other members of the community by 8%. It was also stated by 6% of respondents that the Calliope River will “become another Boyne River” with similar environmental problems and should not be dammed. Some respondents stated that Castle Hope Dam is not viable due to its shallow area and high evaporation rates (4%).

In terms of other members of the community affected by the proposal, it was stated by 16% of respondents, that large numbers of recreational and commercial fisherman facing reduced catches and a decline in related service industries.

Improved water supply to Calliope Shire urban centres such as West Stowe, Yarwun and River Ranch was stated as a benefit of the proposal by 2% of respondents. It was also states that industry will benefit from water supply (6%) and that the proposal would result in changes in catchment land uses and landscapes of the region (5%).

Interviews with residents also reflect issues concerning the regional community. These included:

- Improved general water supply to the region with some residents perceiving strong links between water supply, generation of industry and regional employment. The provision of water for industrial growth it was stated, kept industry in one location (Gladstone Area) generating jobs and reducing pollution in other areas.
- The provision of a second water source, minimising risk, was stated as a benefit to the regional community, by some respondents.
- It was stated that the proposal would contribute to population increases in the centres of Mt Larcom and Calliope due to sub-division and establishment of hobby farms. (At

present however, there is no provision in the Calliope Shire Town Plan for sub-division approval at Mt Larcom).

- Concerns were expressed regarding the potential detrimental effects on professional and recreational fishing by many of the residents interviewed. It was also stated that it appeared as if important regional resources such as fish habitat, at the mouth of the Calliope River, was obviously not a priority for local councils or Gladstone Area Water Board.
- At a national level the proposal would result in the damming of *another* major east-coast river which was not a desirable outcome for some residents.
- Concerns over the increasing industrialisation and ‘development’ in the region and pollution from industries using the water supply were expressed.
- There was also sentiments evident that the Calliope area was used as a wealth generating resource for Gladstone.
- The loss of regionally and locally significant cultural resources such as “Wycheproof” homestead in the proposed inundation area were also cited as an important issue by a number of residents.

Section 5.3

Survey of major industries, government agencies and community and producer groups

As a component of establishing the framework for the Social Impact Assessment, the identification of industries, government agencies and producer and community groups in the region as potential stakeholders was undertaken. These stakeholders were incorporated into the *Stakeholders’ Register*. In order to identify the concerns and issues associated with the proposed development which were relevant to these stakeholders, contact was established, a survey was distributed, and written submissions to the assessment were called for.

The main objective of this survey was to determine the perceptions these groups held regarding the potential impacts of the Gladstone Area Water Board’s proposals, on the community as a whole and on themselves as stakeholders.

The participants were asked questions on three major issues: impacts resulting from the construction and upgrading of the existing Awoonga Dam; potential impacts of the proposed dam on the Calliope River; and potential impacts from the proposed raising of the Awoonga Dam.

Written submissions or responses were received from the following groups and industries:

- ◆ Queensland Alumina Limited
- ◆ Frost Enterprises
- ◆ ICI Australia Operations P.L
- ◆ Queensland Cement Limited
- ◆ United Graziers Association, Gladstone Branch
- ◆ Queensland Commercial Fishermen’s Organization
- ◆ Gladstone Area Promotion and Development Ltd.
- ◆ Department of Environment, Qld.
- ◆ Gladstone Port Authority

It is important to note that a number of industries indicated that this study was premature – in regard to the study being undertaken prior to the proponent’s final decision on the

development proposals – and did not respond. This view was stated by some of the responding industries and groups also. This perception of prematurity was not evident in the community consultation process with community members indicating that adequate consultation was well overdue, given the release of the Gladstone Area Water Board's *preferred strategy* and *Water Supply Source Options* study in June 1996.

1. Industry Responses

Industries in the region are aware of the Water Board's proposals to upgrade the Awoonga Dam and construct a new supply at Castle Hope. Their source of information was the Board itself. Some industries indicated they were consulted prior to the preparation of the proposal.

Various issues were raised, largely concerning water supply security. According to the industries the current water supply is not capable of sustaining present industry water requirements if the region is subjected to continuous drought. This, combined with projected demand they stated, makes water a critical issue for the region.

Effects of proposed water infrastructure developments perceived by industry

Positive Effects

For industry

- Lower cost of water.
- Will give the required confidence that sufficient, reliable and secure water supply will exist to support future investment and development in Gladstone. In other words there will be a long-term security of water supply for the existing and future industries.
- Future economic development will require secured water supply. Damming of the Calliope River would give the added security of a second catchment and a second physical asset.

For the community

- Adequate water will ensure continued economic development and growth in the area.
- Adequate water ensures a quality and amenity of life style that would otherwise not be possible in the area.
- Employment opportunities during and after construction.
- Significant employment and construction investment. Multiple flow-on economic benefits.

Negative Effects

For industry

- Taragoola limestone deposit is situated very close to the existing water line of the Awoonga Dam. Any extension to the current level of water would have devastating effects on these reserves.
- Sterilisation of future limestone reserves (possible).
- Loss of limestone reserves could be an important deciding factor in the location of future industries dependent on limestone.

For the community

- Inundation of properties.
- If extraction of limestone stops 24 full time jobs will be lost.
- 18 contractors will lose work.
- Dam development will have negative effects on commercial and recreational fishing.

Effects of the existing Awoonga Dam

- attractive recreational facility, which has supported considerable economic development in the region.
- directly resulted in employment opportunities and the provision of services that otherwise would not have occurred for Boyne Valley residents.
- availability of water in this area substantially improves the lifestyles of those living here by providing water for gardens, pools etc. The town environment is substantially greener than it otherwise would be.

2. Producer Group responses

Producer groups that made submissions to the assessment indicated that they had become aware of the proposal through media and the Gladstone Area Water Board briefing session. Submissions from producer groups of the region indicated that several effects of the proposed developments on the producer groups themselves, the local communities and industry.

Positive effects as perceived by Producers Groups

It was stated that the provision of further water supplies would attract industry and result in more jobs. An all weather road into Boyne Valley (upgraded Gladstone-Monto Road) should increase the capacity and numbers of Shire residents to live in the Valley and commute to Gladstone for work.

Negative effects as perceived by Producers Groups

- It was stated that resulting industry would ‘bring with it its own specialist workforce’ and only minimal employment opportunities would result and that income generated would ‘leave’ the town with minimal benefit for local businesses. This was contrasted with the present fishing industry with an employment multiplier figure of 2.54 with a significant percentage of money staying put locally.
- Both these preferred options it was stated would impact significantly on the commercial fishing in this region. It was also stated that the viability of fishing industry had been affected by the damming of the Boyne River and the industry would ‘find it very hard to sustain the loss of another major waterway and breeding ground’. Views were expressed that the fishing industry was being ‘sacrificed’ in order to attract other industries to this area.
- It was believed the present Awoonga dam has been used as an excuse by main roads not to upgrade the main access road (Gladstone Monto Rd) to the Boyne Valley.
- The uncertainty generated from not knowing the final height of the Awoonga Dam wall is restricting development in the area.
- It was indicated that the loss of land resulting from the proposal may result in a loss of group membership.
- Concerns for the provision of environmental flows on the Calliope Dam given that no provisions were made during the development of the Awoonga Dam to date despite indications from the proponent that it would.
- The reliance of the Gladstone area on the local fishing culture in terms of tourism was stated. This was evident in regional promotions containing reference to fishing, seafood and the reef. The loss or decline of these resources associated with the proposals would greatly impact upon other sectors apart from the commercial fishing industry.
- The loss of the Calliope River and estuary as valued recreational fishery was also stated as an impact of the proposals.

- The loss of farming land and loss of people from the local area.

Other concerns and issues raised by the producer groups include:

- Views were expressed that Gladstone industry is currently facing more important issues than water including infrastructure, air shed, noise, pollution and location.
- Questions were raised over the 'ownership' of regional water resources and the inequity of the Gladstone industry claiming the regions rivers as their resource.
- Concerns that the proximity of the two proposed water developments would negate the benefits of a two supply 'reduced risk', that is 'what affects one (including blue-green algae) will affect the other'.
- The physical character of the proposed Castle Hope dam is subject to blue-green algae.
- The extent of regional industrial growth was indicated to be affecting quality of life and increasing noise, air and water pollution, and traffic levels. Increased water supply for industry would exacerbate this.
- Groups were concerned that the increased industrialisation of the Gladstone area expected as a result of the proposed water developments would change the "Harbour City" into an "Industrial City" with associated increases in illnesses such as asthma, the reduction in mangroves and underdeveloped foreshores and fish stocks.

3. Responses from government agencies involved in economic and environmental management of the region

Positive effects as perceived by government agencies

- Water supply is a critical factor in attracting new industry and business development as well as attracting expansion of existing business. The construction of a dam or extension of an existing dam would provide economic spin-off effects, the future investment in industry development is potentially significant.
- A significant proportion of the trade through the Port is generated by industries that require a guaranteed supply of fresh water. If new industries proposing to establish in the Port's hinterland cannot be provided with this water, there will be a reduction in future trade through the Port.
- It was indicated that Boyne Valley residents benefit from development in Gladstone and surrounding areas in respect of commercial, cultural and recreational facilities.
- It was stated that the proposals represent a component of the infrastructure needed for development which will continue to boost the economy and employment opportunities at Local, State and Federal levels.

Negative effects

- Increasing the amount of water available for use by industry will remove the need for current and future industries to seriously consider minimising water usage and/or recycling options.
- The Awoonga upgrade would inundate a great deal of productive farmland, and road and rail corridors will need to be relocated.
- Fish migration up the Boyne River has ceased.
- There would be some short term economic benefits, but any immediate to long term economic benefits from associated industrial expansion would be to the detriment of the environment.

Section 5.0 Review

Impacts of Awoonga Upgrade as identified through community survey respondents and interviews with members of the affected communities were found to relate to several groups of issues or types of impacts. These are outlined below and some prominent examples are provided.

1. **Access** issues were the most prominent concern amongst the communities. These involved decreased access to properties and general local areas, longer travel distances and prolonged flooding of local roads. The Gladstone–Monto Road being ‘cut’ would result in increased travel time to work, increased distances to major markets for producers, increased operating costs and reduced access to community services in the urban centres.
2. **Loss of property through inundation** – land in inundation area considered the ‘most productive and valuable’, resumption of property and dwellings, partial inundation effecting viability, loss of farm infrastructure. Some 18% or 48 respondents indicated they would lose property through inundation resulting from the Awoonga Dam Upgrade as well as several landholders interviewed. Viability of remaining properties affected.

Opportunities for relocation of grazing properties subject to resumption and inundation appear to be limited. The competition for available remaining grazing and other rural land in the immediate area will increase. These reduced options for relocation of grazing and other rural land uses will be compounded by similar development proposals in the adjacent Calliope Valley and by other rural land pressures such as mining tenures in the Yarwun and Targinie districts, limestone mining proposals and effects in the Bracewell, East End and Machine and Hut Creek areas, proposed infrastructure development and pollution associated with increased industrial and urban expansion in the region.

3. **Uncertainty** generated by the proposal to upgrade Awoonga Dam is seen as a continuation of long-term uncertainty for residents of the Boyne Valley. Residents are unsure over the future condition of local communities, roads and the possibility of increased flooding. Uncertainty regarding the likelihood, timing and extent of the proposal has generated frustration and indecision with property management and planning.
4. **Local community and economic issues.** Improved water access/supply for irrigation and domestic needs, indirect benefits from an improved and revitalised local economy, employment generation in construction and service sectors, an increase in rates and water costs, decreased local food production levels and declining viability of properties, and, the loss of local heritage values was stated. Concern exists amongst some members of the community that job loss associated with the inundation of Taragoona Limestone Quarry will occur, despite proposed engineering safeguards at the site.
5. **Community social issues.** Social issues relating to family and personal circumstances were raised widely during interviews. Proposals were accelerating the rate of social change in the communities of the Boyne Valley. Effects of recent resumption include diminished opportunities for friendship groups and other social networks or support.
6. **Recreation and Tourism.** Informal and natural recreation areas in rural districts would be lost to inundation while recreation facilities may be provided at upgraded dam site. Resulting growth in recreation and tourism potential of Boyne Valley associated with improved access from the Gladstone-Monto road upgrade may improve local business opportunities. Decline in recreational fishing unless fish ladder construction is adopted.

7. **Equity issues.** Inequity of water costs and increase in rates will continue to adversely affect the aged and other low-income earners in the community. Some residents stated that they believed regional wealth generated by the industrial growth from the proposals would not translate into investment in local social, support and education services and infrastructure.
8. **Regional community and economic issues.** Gladstone industry would benefit from the improved water supply, the safety of the upgrade is in doubt, loss of potential mineral resources to the region through inundation, and significant regional environmental impacts.

Impacts of the Castle Hope dam proposal identified through community consultation can be grouped within the following issues. Examples of the type of impacts associated with these issues are provided also.

1. **Access and inundation issues-** loss of access at local and property scale, increased freight costs, access to stock and migration of stock would also be affected. Major local access problems associated with the inundation and relocation of the Bruce and Dawson Highways were stated as an impact on the general community.
2. **Land, infrastructure and inundation** – loss through inundation of what is considered the Calliope Valley's most valuable or productive land. Proposed dam will impede the draining of natural floodwater, potentially damaging pastures. Construction of new yards and fencing associated with stock access to the water body and relocation of property boundaries major financial cost to producers. Questions of ownership of property within the proposed buffer zone. Inundation of the major properties which represent cultural and production resources to community. Perceived lack of suitable land available in the district for relocation. Similar pressures for remaining rural land, suitable for grazing and other production activities, will become evident as is expected in the adjacent Boyne Valley.
3. **Uncertainty** - Residents generally expressed the desire for a decision from the Gladstone Area Water Board to allow property planning to continue and financial decisions to be made. It was also stated that the general uncertainty generated by the proposal has translated into the broader local communities and was having an adverse impact. This involved uncertainty over proposed water levels, the extent of property inundation and the possibility of relocation.
4. **Local community and economic issues** - increased water supply for property, irrigation, stock access or domestic use, prolonging present employment or the generation of employment in construction phase were perceived as positive impacts. The overuse of remaining productive farm land, flow-on effects of reduced local population on local business were negative effects of proposal.
5. **Personal social issues** - members of the Calliope Valley communities would be adversely affected through disruption or loss of lifestyle, loss of friends and social networks through relocation and the loss of cultural heritage, old homes and family properties.
6. **Community social issues – structure, networks and cohesion.** Strong concern amongst residents that the inundation area consists largely of older members of the local communities who fulfil roles as local librarians/historians, church elders, leaders and members of rural groups. Disruption of cooperative relationships between adjacent landholders such as work-sharing, common farm infrastructure and management. Impact

on social stability, values and attitudes with an ‘industrial town mentality predominating’ and a loss of a rural ethic or rural sector contribution to the community.

7. **Recreation and tourism** - loss of recreational amenity and value on the Calliope River (swimming holes, camping areas, fishing spots), loss of tourism and eco-tourism potential of the Calliope River in its natural state. Belief that proposal may detract from existing recreational and tourist opportunities downstream of the dam site due to the lowering of river levels and reduced flows.
8. **Regional community and economic issues** – Regional environmental concerns including the destruction of fish habitat, siltation, restricted flows and increased pollution with regional industrial growth. Potential loss of the Calliope River as an environmental resource to community. Impacts on recreational and commercial fishing and related service industries; changes in catchment land uses; perceived links between water supply, generation of industry and regional employment; changes in traditional regional economic activities.

Regional industry, producer groups and state government agencies identified several impacts of the proposed Awoonga upgrade and Castle Hope construction. The main impacts are presented below.

Positive impacts identified included:

1. Proposals are recognised as a component of regional economic growth through expansion of existing industries and securing new industry. General acceptance that provision of secure water supply through the proposals would contribute to meeting projected industrial supply demands for the region. This incorporates provision of low cost water to major industrial consumers. There was general belief that industrial growth associated with the proposals would provide certain employment opportunities and enable the continuation of trade operations from the Port of Gladstone.
2. It was stated that regional economic benefits associated with industrial expansion include the provision of cultural, recreational and commercial facilities in the urban centre of Gladstone, services that may be used by the rural hinterland.
3. Proposals would directly generate employment during and post-construction.
4. Infrastructure investment associated with proposals would include the upgrading of the Gladstone-Monto Road.

Negative impacts identified include:

1. Loss of jobs and potential mineral resources associated with Taragoolla limestone quarry. -
2. Due to the tendency for importing specialist labour, minimal economic or employment opportunities are expected for communities local to the development sites.
3. Major detrimental impacts on region’s commercial fishing industry and supporting service industries through reduced environmental flows on estuary and river health. Flow-on social impacts of commercial fishing industry decline.
4. Negative impact on fishing-orientated regional tourism industry.
5. Loss of productive farming land from the region and reduced agricultural production output. Resumption of rural properties may also impact on the membership and viability of rural producer groups.
6. Proposals will reduce the perceived need for the implementation of water conservation and recycling technologies for regional industry.
7. Considerable concern regarding environmental impacts associated with proposals including the contribution to regional air-shed pollution pressures and associated health problems in the regional population; increased degradation of coastal mangrove

communities and fish riverine habitat; reduced water quality and reduced environmental flows. Significant loss of Calliope River as a free flowing east coast river system.

Section 6.0

Community participation, mitigation and development alternatives

Introduction

This section of the report, Section 6.0, discusses three aspects of the development process. Firstly in section 6.1 it documents the extent and means of community participation, which has occurred to date, in decision making processes of the proposed infrastructure developments. Secondly, section 6.2 explores potential mitigation measures identified by community members, industry, government bodies and producer groups in the region. Finally section 6.3 presents opportunities arising from, and documents alternative options to, the proposed developments as perceived by members of the community.

Section 6.1 Community Participation

The infrastructure development proposal process has formally been in operation since the public release of the *Water Supply Sources Options* study in June 1996 by the proponent, the Gladstone Area Water Board. At the time of consultation with the community for this independent assessment, September 1997, the public process had been operating for over twelve months. The benefits of proper community participation in the decision making process are well documented in SIA literature. As part of this assessment, the extent and nature of community involvement in the process was examined through residents' perceptions of the process and their individual involvement.

Community access to the decision making process

Table 6.1 below, presents the most common responses from survey participants as to their involvement in the process to date. Despite the distribution of the *Community Survey* being confined largely to Calliope Shire, whose communities are most likely to be affected by the proposed development, some 71% of survey respondents stated that they had not been provided with avenues for participation in the proposal process. Some 5% of respondents indicated they had minimal input with 4% stating they had input through attending public forums or meetings.

Table 6.1
Respondents input / access to decision making process

	Percentage of Respondents (%)
None, no input	71
This (RSERC) survey	10
Minimal input at this stage	5
Public forums, presentations	4
Other	16

n=227, mean responses=1.0

'Other' means by which survey respondents indicated they had been involved in the process included expressing their views in the local print media; personal contact with local council or Water Board staff; by directly lobbying state government representatives; lodging an objection and having interviews with members of the Rural Social and Economic Research Centre study team. Other respondents stated that they stayed informed about the proposal through the media; believed the opportunity was there but sought no input and expressed concerns that public forums were not a suitable avenue for many local people.

Aspects of community participation were also discussed during interviews with residents of the area.

Several residents made strong links between their capacity to input into the decision process, ability to negotiate and the provision of detailed accurate information from the proponent. For the respondents the more common experience was a lack of this information provision leading to inability to equitably negotiate with the proponent or contribute to the process. There were also sentiments expressed that at previous meetings or presentation of reports by the proponent the flow of information was one way.

Several residents stated that they had been provided no means of access to the process at this point in time. Landholders who were interviewed in the inundation area of the proposed Castle Hope Dam site stated that they had received no direct notification from the proponent.

Some residents interviewed stated that although their input had been minimal, they believed the process for the current proposals is better than what existed at the time of construction of the existing Awoonga Dam. Others stated any input they provided as landholders would have limited effect on the outcome of the proposals and the proponent and government bodies were 'not interested in what local people think'. There was a general perception that the level of communication or consultation from the proponent to date had been inadequate, particularly in the early stages of the proposal. There was also some frustration that landholders that were directly affected by the proposals, had had to make contact with the proponent.

Community access to the process desired

Table 6.2 below, presents the most common responses to the type of input desired by community members into the decision making process. It is important to note that the provision of information and access to IAS processes for the proposals was stated by many individuals (26%) as a mode of input into the process. There is strong evidence of a general desire for involvement amongst community members with some believing a local 'vote' on the proposals would be appropriate (18%) and with 12% of respondents expressing the desire to register their views and concerns with the proponent and have these concerns given genuine consideration. Some respondents indicated they wanted opportunities for direct consultation with the proponent.

Table 6.2
Input desired by respondents into decision making process

	Percentage of respondents (%)
Information supplied on details of proposed development, view IAS, information to empower locals in decision making	26
None, no input desired	18
Local referendum, vote on development proposals	16
Able to express, register opinions, views, concerns that will be registered and actually given consideration	12
Direct consultation with proponents, opportunity to respond to	7

proponents	
Involvement through public forums, meetings	7
This survey, other surveys	6

n=174, mean responses=1.2
other= 39 or 22%

Other residents stated that local, historical knowledge supplied by local residents needs to be incorporated into planning and decision making. There was also the belief expressed that community should have an equal say in the proposal with industry and government. Some suggestions were that rural residents have a formal representative on the Gladstone Area Water Board; community representative (non-government) have access to Water Board and Department of Natural Resources project planning meetings; and community input into the selection of IAS consultants.

Other respondents indicated that they believed the decision had already been made or that the decision making should be left to the local authorities, government agencies and the proponent, but these views were not widely held.

During the **interviews** a number of residents indicated that they wished to have greater access or involvement in the process.

- It was reported that despite the Gladstone Area Water Board stating that they have been actively consulting with affected landholders, respondents have had no personal contact from the Board or any opportunity to input into the decision making process. The feeling that the Board is only interested in water supply and not community issues was prevalent. The release of report mid last year, it was felt, has been the extent of the 'consultation' process by the Water Board.
- Affected landholders stated they would like to hear from and be visited by members of the Water Board.
- It was also felt the Water Board had 'all the facts and figures' and that discussions would be one-sided with landholders not in position to undertake negotiation unless available information was provided to landholders prior to visits or discussion with the proponent.
- Negotiation was seen as a desirable process for some residents
- It was indicated by some landholders that providing the process is undertaken properly, they had no real opposition to the proposals.
- Widespread feelings were that residents were being disenfranchised from the process. Rural landholders in particular believe the decision is solely between the proponent and the State Government and that neither would 'pay much attention' to their views and were not confident of their opinion being taken into account in final decision making.

Section 6.2

Mitigation measures identified by stakeholders and compensation issues.

Mitigation measures are those provisions made, or actions taken, that aim to lessen the negative effects of a proposed development on the local communities, other stakeholders, the environment etc, and seek to maximise the benefits of the proposed development for the same. The mitigation measures presented here include some which refer directly to actions of the proponent, whilst others are concerned with ways in which the local community or individuals can mitigate present and potential impacts of the proposals.

Mitigation measures presented in this section were identified through interviews with landholders, community survey respondents, and, industry, producer group and government body submissions. These measures are outlined and discussed.

Community identified mitigation measures

The table below (Table 6.3) displays the most common measures identified by community members through the survey.

Table 6.3 Community proposals for mitigation stated in survey

	Percentage of respondents %
Community communication with proponent and government, involvement, concerns registered with consultation with proponent and others to ensure locals benefit not only industry	28
Be informed	15
Sound IAS conducted	10
Support groups seeking community involvement	8
Use local member of parliament, council to achieve representation of views	7

n=162

mean responses=1.3

Other measures suggested by community members that are community driven or capable to be incorporated into the proponents mitigation strategies included: ensure locals are employed during construction phase of proposals; retrieve timber suitable for milling prior to inundation with proceeds of the sale of the timber to go to displaced landholders not the proponent; stock dams with suitable native fish and construct fish ladders; and, to organise more community meetings for better information and communication between affected landholders. It was also stated that there was a need for both the proponent and the communities concerned to think long term regarding the impacts of the proposals.

During interviews community members also suggested several mitigation strategies:

1. **Open communication** between members of the affected communities and between the community and the Water Board. This would reduce friction and distrust amongst local people which hinders efforts at real community participation.
2. Water Board to provide for **negotiation** in agreements with landholders.
3. Sound **buffer zone planning** for residents adjacent to water bodies or engineering works
4. Provision for proper **environmental flows** during and following construction of proposals to ensure downstream river health and fish passage.
5. Water Board should seek to use **local knowledge** resources and facilitate community input. This would improve decision outcomes on location of structures due to local knowledge of previous flood levels - make the proposal work at a local scale. Increasing community participation would improve relations between proponent and the community.
6. Local and state level government needs to state their involvement and interests.
7. Provision of recreation infrastructure at new sites.
8. Ensure that no significant archeological sites present in inundation area.

Industry identified measures

Possible mitigation procedures indicated by industry submissions involved:

- Adequate compensation for those displaced by dam construction to buy a replacement property.
- That a water wise culture will need to be encouraged not to waste water.
- Provision of alternate access routes.
- Maximise opportunities for development.
- Better communication between developers and community.

- Educating the community about impacts.
- Identification and management of key stakeholders.
- Planning and proper execution of plans.
- Creating a balance between community expectations and industry needs.
- Ensuring that infrastructure put in place today has the capacity to meet future needs without financially penalising current industries.

Producer group identified measures

- Knowing the location of proposed dam site and dam wall height
- Provision of suitable access from the Boyne Valley.
- Make a decision as soon as possible.

Government agency identified measures

- Gladstone community needs to have the opportunity, not bureaucrats, to decide whether they want 'massive' industrial expansion that would severely impact on their environment.
- Both dam proposals and the other alternative, no dam, need to be considered by the whole community when details can be made available.
- In view of Gladstone's limited air shed any decision to change air quality standards would be totally unfair to the community - who are already very air conscious.
- Better utilization of existing water sources through recycling.

Compensation Issues

Although issues concerning compensation are within the context of minimising the impacts of the proposals, and therefore mitigation, they will be outlined and discussed separately due to the potential, and apparent, importance placed on this aspect of the proposals' impacts. The following issues are those raised during interviews with affected landholders and other members of the local communities in Calliope Shire.

1. If and when the proposal is finalised, swift compensation or settlement is required. If a perceivable lag-time exists between decision and receipt of compensation, changes in market conditions or land values may prevent the producer buying back into the market or purchasing suitable land.
2. What real potential for negotiation is available to landholders and who has the final say?
3. Will compensation include property and house maintenance outlay or infrastructure investment made in the period after proposal announcement (June 1996) and before final decision on proposals. It was also a widely held belief that compensation would not include existing infrastructure and improvements to property.
4. Compensation may represent the value of the land but not the future production potential in the land.
5. Some landholders felt that adequate compensation was not the issue, as no money would compensate for the loss of their way of life and the loss of a viable property contributing to the economy. It was also stated that it was unlikely that any property of similar quality was available in the district.
6. Property valuations to date by the proponent have not reflected infrastructure investment or crop and soil values - belief that valuation would not allow the purchase of a decent house in an urban area after relocation.
7. Belief that compensation would need to be double the market value in order to re-establish a viable operation on a suitable property.
8. A small number of landholders expressed views that compensation for their property was

an attractive option as they sought to relocate from the district

In order to assess the general feeling within the wider community on the issue of compensation for potentially affected landholders, Community Survey respondents were asked to state their level of agreement or disagreement with the statement, "compensation for inundated land needs to be more than its market value". The summarised responses are presented below in Table 6.4.

Table 6.4

Surveyed response to "compensation for inundated land needs to be more than its market value".

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Total respondents	44	35	8	10	2	2

n=263

From Table 6.4 it is evident that the views on compensation held by affected landholders are also present amongst the wider community in Calliope Shire. It appears that there is a very strong belief that any compensation for landholders properties which are to be inundated by either of the proposals, needs to be above the estimated market value determined for that property.

Section 6.3

Opportunities for locals and alternative options to development

By local communities identifying opportunities arising from the proposals, they also identify possible avenues of maximising any positive impacts that, in turn, may contribute to the mitigation process. Alternative options to the proposed water infrastructure developments, as perceived by residents of Calliope Shire are also explored in this section.

Opportunities for locals

In order to evaluate the local community's perception of potential beneficial opportunities arising from the proposals, respondents were asked to identify these opportunities through the *community survey* and during interviews. Table 6.5 below, presents the more common opportunities stated by respondents.

Table 6.5

Opportunities for local people and business

	Percentage of respondents %
Industry benefits from water supply	29
Employment , income generation	20
None, no opportunities	15
Recreation facilities	12
Boost to Calliope economy	10
Local irrigation, stock access	9
Tourism and related opportunities	9
Other	31

n=197

mean responses=1.4

Although the question related to opportunities for "local business and people", it is worthwhile to note that the most common response in Table 6.5 refers to benefiting regional industry rather than local communities. It was also a common perception that the proposals

would provide opportunities for employment or increased generation of income. A notable portion of respondents indicated that the proposals present no opportunities for local business or local people. This sentiment is also evident with previous development where respondents stated that Awoonga Dam had provided little benefit to the people of the Boyne Valley (Table 4.4, p39).

Other less commonly stated opportunities by respondents included commercial fish farming in the new water bodies, increased housing development and employment generation in Gladstone. A number of respondents stated that any employment generation would be in the short term only, that industry in Gladstone was the only beneficiary or that the proposals would in fact reduce existing opportunities.

The **interviews** revealed similar kinds of perceptions of opportunity from residents, such as;

- Remaining land adjacent to the water bodies may be suitable for rural residential subdivision.
- Increased work prospects “in town”.
- Several opportunities were identified for primary producers not affected by inundation including; increased irrigation potential, diversification opportunities with improved water supply and stock access to water and ponded pastures.
- Stocking of water bodies with fingerlings.
- Recreational and tourism based opportunities.

It is necessary to note that when discussing possible opportunities arising from the development, most residents interviewed indicated that these new opportunities were less significant than the existing opportunities likely to be lost from the proposals. A number of residents also indicated that no opportunities would arise for the existing local community from the proposals.

Table 6.6 displays overwhelming support within the broader Shire community for providing primary producers local to the development with access to the water resources generated by the development. It appears that access to water supplies represents a tangible economic opportunity for the local community, for which there appears to be a perceived entitlement.

Table 6.6

Surveyed response to “local farmers should be given access to water from dams for irrigation and stockwater”

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Total respondents	43	45	7	3	1	2

n=262

Alternative options to development proposals

From preliminary consultation it appeared that there was a belief amongst the Shire community that alternatives to major water infrastructure development in the region had not been investigated by the proponents or the State Government agencies responsible. From responses collected via the *Community Survey*, two points can be made concerning this belief. Firstly, there is evidence that a notable portion of the community believe that alternatives to dam construction have not been investigated properly and, secondly, that an equally large proportion of the respondents did not know. The significance of the second observation is that there was apparently limited discussion or information presented in the media or other public forums on the alternative options to the present type of development proposal. In effect,

alternative development options are removed from the public agenda reducing the public debate to a question of yes or no on the proposals presented. There was however some respondents who indicated that they felt alternatives had been investigated.

Table 6.7

Surveyed response to “alternatives to major dam construction have been thoroughly investigated”.

	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %	Don't Know %
Total respondents n=260	3	14	11	21	15	36

Community Survey respondents were also asked to state any alternatives to the construction of the Castle Hope Dam and Awoonga Upgrade proposals that would better benefit the people of the Gladstone-Calliope region. Table 6.8, below, outlines the more common responses.

Table 6.8

Community identified alternative options to proposed water infrastructure developments.

	Percentage of respondents %
No alternatives to proposal	38
not aware of alternatives	16
Desalination, Research and development funds for desalination	14
Recycling and water conservation options for industry, local councils and residents	11
Regulation, policy changes – limit use levels for industry	7
Feeder dams in hill country/ rolling dams on River tributaries	6
Improve existing water efficiency of industry	6

n=185

mean responses=1.2

other responses= 22%

Other less common alternatives to the development proposals stated by respondents included: no construction of dams; construction of weirs on tributaries; use of underground water; alternative regional income base such as tourism and the natural environment; reduce industry requirements for water through disincentives; upgrade and dredge existing storages to increase capacity to negate the need for new storages; and the potential use of ‘pit water’ from local mine sites (ACL, Southern Pacific, QCL).

Approximately half the respondent population were not aware of any alternatives to the proposed development or stated that there were no alternatives. Given however that there was fairly strong support for the implementation or investigation of alternative options such as desalination, water policy reform and increased water use efficiency and recycling by major consumers, this indicates that the Shire community perceives there to be viable alternatives to large scale water infrastructure development. This may reflect the degree of acceptability of these proposals and proposals of this nature within the Shire community.

Several alternative options were raised during **interviews**. The more prominent options stated by residents included:

- Several residents acknowledged the current limitations of desalination for large scale water supply yet stressed the importance of research and development by industrial consumers in the immediate future.
- A number of smaller ‘feeder’ dams on Diglum/Dan Dan Creek and possibly the Eastern

Boyne River which would release flow during high need periods to feed Awoonga Dam, replacing the need to raise Awoonga Dam wall. This has apparently been considered a viable option amongst some community members for 40-50 years, with four or five possible sites from which two or three feeder dam sites could be chosen. A secondary storage such as a feeder dam located in the upper Boyne Valley, it was stated, would also provide irrigation and domestic supplies and improved quality of life for residents in the Builyan–Many Peaks areas. A series of smaller weirs on the Calliope River rather than a single large construction was also stated to be more acceptable and would also provide better opportunities for locals with reduced development impact. Multiple sources and believed to be cost efficient.

- Policies to make industrial water users more efficient, more cost-effective use of available water supply, recycling, reuse of grey water.
- Several residents indicated that Baffle Creek should be the preferred development location and not Castle Hope due to higher potential yield, minimal effects on transport infrastructure and limited damage to productive farming land and private property.
- Numerous concerns were raised over the sustainability of large-scale dam development and its capacity to supply industry past the 20-year horizon. There is a strong perceived need to explore alternative water supply technologies.
- It was also suggested that the relocation of the Dawson Rail be placed through Deep Creek.
- The present status of viable productive farming land as opposed to other economic returns from inundation was stated by a number of residents as a definite economic alternative to the development proposals. There was also discussion of the Boyne Valley and adjacent areas filling a market garden role for the expanding urban centres in the east of Calliope Shire and Gladstone City. It was felt the inundation of the most productive alluvial flats would prevent this.

Section 6.0 Review

Some eighty-percent of *community survey* respondents and many residents interviewed, indicated they had not been provided with sufficient means of participation in the development proposal process. For many respondents, including residents in the proposed inundation areas, the more common experience was a lack of information provision from the proponent creating an inequitable negotiating environment and generally an inability to participate in the process. There were also sentiments expressed that at previous meetings or presentation of reports by the proponent the flow of information was one way. There is a perception within the community that the proponents and local and state governments do not care what local people think.

There is considerable desire amongst communities in Calliope Shire for increased involvement in the development proposal process. This varied in the type of involvement sought including improved information provision, direct consultation and negotiation with proponents, more frequent community meetings and community representation on the Gladstone Area Water Board or decision making bodies.

Mitigation measures sourced from the community, industry, producer groups and government, tended to emphasize several factors. These were: improved communication between the affected community and the proponents- including community participation and community driven support networks for affected members, sound local and regional planning (including IAS), provision for environmental flows and maintaining fish habitat, tangible benefits for local communities and compensation for affected landholders.

Issues associated with compensation included: swift settlement following the development decision; desire for negotiation; inclusion of infrastructure and maintenance costs incurred

since announcement of proposals; the value of potential/future production; loss of lifestyle and quality of life; lack of available land to relocate to, and, the need for compensation to be double the market value in order to re-establish a viable property. There was strong support within the wider community for compensation payments being above market value.

Regarding opportunities for local people and businesses (local to the proposed development sites), a common response was that only regional industry would gain from the proposals with little benefit for the local community. It was also a fairly common perception that the proposals would generate employment and income for locals. Residents in the affected communities indicated that any new opportunities arising from the proposals were less significant than those that would be lost as a result of the development. There was overwhelming support within the broader community for providing primary producers adjacent to the development with access to the water resources generated by the development.

A notable proportion of the community believe that development alternatives to the present proposals have not been investigated fully. An equally large proportion of residents did not know. Alternative options to the Gladstone Area Water Board's proposed developments appear to have been withheld from the public agenda. The communities surveyed identified a number of alternatives to the proposed development.

Section 7.0

Review and Recommendations

Introduction

The purpose of this final section, Section 7.0 is to present a concise review and discussion of the main findings of this Independent Social Impact Assessment for the proposed Awoonga Dam Upgrade on the Boyne River and proposed Castle Hope Dam construction on the Calliope River. Where appropriate, recommendations relating to these findings are also presented.

The social issues and impacts identified in this assessment are presented below. Where possible these issues and impacts are presented within the context of the Terms of Reference set for this assessment as detailed in Section 1.2 of this report.

The **study objectives** and **Terms of Reference** are restated below.

The principal objective of this study is to identify social issues and potential social impacts relevant to the proposed water infrastructure developments of the Gladstone Area Water Board on the communities of the Gladstone-Calliope region.

The **Terms of Reference (TOR)** for this study are as follows:

- conduct an independent social impact assessment of the proposed Castle Hope Dam development on the Calliope River and raising the existing Awoonga Dam on the Boyne River, Gladstone;
- evaluate social impacts of earlier development projects in the region, particularly the construction of Awoonga Dam.
- identify measurable social impacts of development proposals on factors of population change and effects on employment opportunities within the communities.
- identify qualitative impacts such as effects on social relationships, impacts on psychological attitudes and community cohesion.

It is important to note that this final review section represents an overview of the major findings and recommendations of the assessment. It cannot and does not provide the level of detail on specific issues and impacts presented in the previous sections. The information presented below should be read and acted upon within the context of the broader findings outlined in relevant sections of this report.

Social Impacts of previous development – Lessons from the Boyne Valley and Awoonga Dam

‘evaluate social impacts of earlier development projects in the region, particularly the construction of Awoonga Dam.’

Since the most relevant previous developments for the communities of Calliope Shire and for this study are the initial construction and subsequent upgrades of the existing Awoonga Dam on the Boyne River, impacts discussed below refer to these developments unless otherwise stated.

Effects on regional and local populations

From population trends of Calliope Shire it can be inferred that the Shire’s population overall has tended to correspond with the level of major development activity within or adjacent to the Shire in the Gladstone area. It appears that the 1984 Awoonga Dam upgrade may have contributed to a marked rise in Shire population figures which also corresponded with increased enrolment numbers in Calliope Shire’s and Gladstone City’s State primary schools at that time. These periods of increase were followed by pronounced periods of general population and enrolment decline (particularly schools in the smaller localities). It is believed that the increases were associated with the construction phase of the 1984 Awoonga upgrade with the influx of temporary workers to the region and their families. Factors such as resumption of land and delayed service provision to Boyne Valley associated with the ongoing Awoonga Dam development, have in fact reduced both school enrolments and local populations in the rural hinterland of the Shire. This is in contrast to the high rates of population growth being experienced in the eastern urbanised sectors of the Shire such as the Boyne-Tannum area.

Further water infrastructure development in the rural hinterland of Calliope Shire, it is believed, may effect the local communities’ population in a number of ways.

1. Result in a 3-4 year period of increased demand on the Shires educational resources, during the construction phases of the proposed developments. The proposed timing of the developments (if not concurrent) may extend this period. Although, given the previous capacity of the schools to respond to rapid influx in enrolments (e.g., 1980-3) this may not present a problem if this influx is anticipated and resources are provided.
2. The potential exists for the post-construction phase of the developments to involve a marked decline in local school enrolments. This would result from the outward migration of temporary workers and their families and the loss of families from the rural localities due to resumption of land and uncertainty preceding the development. The loss of the established enrolment base of local families, added to the anticipated post-construction slump, could seriously effect the viability of schools in the Shire’s rural localities.
3. The eastern urbanised sector of Calliope Shire is expected to continue the current trend of strong population growth displayed over the previous decade, whereas the effects of the proposed developments may contribute to the decline in population numbers which the rural localities are experiencing.

Impacts on traditional economic base

Over half of the business locations in Calliope Shire are involved in primary production - including fishing - (Figure 3.3 p20). Impacts of previous development are perceived by residents of the area to have negatively impacted on both primary production and the fishing communities. With a second development proposal that may potentially generate similar impacts, the local communities may understandably be concerned about the long term viability of their traditional economic base.

Service provision to Boyne Valley communities

In its submission to the study, industry has indicated that the existing Awoonga Dam has resulted in employment opportunities and the provision of services for residents of the Boyne Valley that would be otherwise unavailable (section 5.3). It appears however following extensive consultation with residents of the Boyne Valley that their perception is that the present Awoonga Dam is largely responsible for the lack of service provision in that district including adequate transport infrastructure (condition of the Gladstone-Monto Road). Those residents living in the middle and upper portions of the Boyne Valley believe the Dam has resulted in a service drain from their area as a result of reduced populations contributed to by the dam. Neither do they perceive the recreational facilities supplied at the Awoonga Dam site to be 'local' or accessible.

Water use and access conflict

Boyne Valley residents indicated that the construction of the Awoonga Dam has contributed to the inequitable distribution of, access to and cost of water to the various users in the region. There appears a distinct and pressing need for local authorities, state level government and the proponent to acknowledge and address existing water use and water access conflicts in the Boyne catchment. The potential for conflict is also present in the Calliope catchment associated with the construction of Castle Hope Dam on the Calliope River.

Recommendation:

1. Prior to the initiation of construction in both catchments the proponent should seek to establish water access agreements or conditions of use with landholders and make this and other related policy widely known, particularly relating to stock access, irrigation access, downstream uses and domestic use. Local community members need to be fully aware of either the benefits or restrictions associated with the use of proposed water bodies prior to a final decision being made. Establishment of a catchment management group consisting of local residents and other stakeholders may be a valuable option.

Perceptions of environmental degradation

There is a perception held amongst many members of the Calliope Shire community that the construction of the Awoonga Dam and subsequent upgrades have been responsible for adverse changes in the physical character and ecology of the Boyne River and its tributaries. There is a perceived loss of a 'healthy' river, involving the loss of native fish populations, siltation, weed infestation and reduced flows and general water quality.

This perception of environmental degradation of the Boyne River is often associated with a loss of recreational amenity and aesthetic attributes of the Boyne River by many residents and

particularly rural landholders. Given that nature based recreation is important for many residents of the Shire and this recreation is strongly associated with the regions' water courses, the loss of several informal recreation areas in the Boyne and Calliope catchments from proposed inundation will impact upon the quality of life of residents.

Recommendations:

2. The proponent investigates the development of 'local' informal recreation nodes or sites in consultation with the rural communities adjacent to the proposals for nature based recreation.
3. The community is consulted during the proponents' IAS regarding the type and degree of local environmental change to their watercourses associated with the proposed developments.

**Social Impacts of current development proposals –
*Current and potential impacts on the communities of the Calliope and Boyne
Valleys***

'identify measurable social impacts of development proposals on factors of population change and effects on employment opportunities within the communities,'

and,

'identify qualitative impacts such as effects on social relationships, impacts on psychological attitudes and community cohesion'.

Employment

There is considerable potential and expectation in the community that the proposed developments will result directly or indirectly in the generation of employment. The generation of employment associated directly with the proposals would be in the construction workforce required for the development and supporting services, and also through the establishment of industry from the provision of bulk water supplied by the proposals. There is however fairly strong concern that these employment opportunities are short term, centred in the eastern sector of the Shire and may involve an introduced specialised workforce. High rates of unemployment are evident in sectors of Calliope Shire notably Yarwun, Benaraby, Calliope Township and sectors of the Boyne Valley.

The smaller rural localities generally anticipate that most increased demand for business, retail and recreational services generated by the development project workforce will be focused in the major urban centre of Gladstone.

Recommendation:

4. If the proposals proceed, the construction workforce and supporting service providers should be sourced where possible from the communities adjacent to the development locations, and then from a district or regional base if necessary. This use of local labour in construction and maintenance of the proposed developments was stated as an essential mitigation measure by the affected communities and would represent a tangible economic benefit to those communities. The income generated from this employment is more likely to flow-on to other service providers in these local communities benefiting their immediate economy.

The extent of local job loss associated with inundation of rural properties, is not restricted to the landowner whose income is directly linked to and dependent on the inundated property. It has been identified that in a number of cases, potentially inundated properties have permanent farm labourers who live on the property in some cases with their families. The resumption of these properties would deprive these people of their income, their homes and force them to relocate. It is unlikely that they are entitled to compensation from the proponent. It has also been identified that local loss of income extends to other local landholders who supplement their income through providing earthworks and other services to the properties likely to be inundated. In some cases it appeared that the loss of this supplementary income would affect the overall viability of these neighbouring properties.

Recommendation:

5. In order to assess the real extent of the proposals on the local economy and employment characteristics, these direct yet 'hidden' impacts on local jobs and income must be incorporated into the final benefit-cost analysis by the proponent.

Community structure and heritage

Due to historical patterns of settlement and occupation in the region, inundation also tends to affect the older established properties, often situated on the prime grazing land in the area. The continuity of production on these properties provides a valuable asset to other primary producers in the region in the form of long running pasture trials with the Department of Primary Industries and other activities which eventually filter through and benefit the broader local and regional production communities.

Associated with these properties are the landholders who on some properties have four family generations of association with the property. It is often these families who are involved in local producer and community focused groups and retain significant written and oral historical records of their township and region. The loss of these established properties and families from the region would contribute significantly to the decline of community structure, identity and locally generated production and educational assets.

Cultural Heritage

Several properties and dwellings within or adjacent to the proposed inundation areas were identified as having significant European cultural heritage values. The two examples used in this report 'Cluden' at Nagoorin in the Boyne Valley and 'Wycheproof' in the Calliope Valley are both significant in terms of the historic settlement of the Shire and have dwellings or other culturally significant sites dating to the 1890's. Properties such as these represent an important local and regional historical and educational resource and are intimately linked to the identity of their respective areas. It was not within the scope of this assessment however to conduct a detailed cultural heritage survey of the proposed inundation areas.

Recommendations:

6. As a component of any forthcoming IAS study conducted by the proponent, a full cultural heritage survey should be undertaken involving properties in and adjacent to the proposed inundation areas. This would perceivably involve local historical groups that operate in the Shire namely the Boyne Valley Historical Society and the Port Curtis Historical Society. The potential loss to the community of these places as historical, educational and heritage tourism resources need be evaluated within the proponents IAS.

Information and communication

It is apparent that the high degree of anxiety and uncertainty within the community can largely be ascribed to two factors. Firstly, the inability of community members to participate in the development process and secondly, the lack of the provision of regular, timely or appropriate information by the proponent, which in turn contributes to the first of these two factors.

The consultation for this independent impact assessment was conducted some 14 months after the formal release of the proposed *preferred strategy* of the Gladstone Area Water Board, incorporating the Awoonga Dam upgrade and Calliope River Dam proposals. Yet widespread uncertainty still exists amongst potentially affected landholders and other residents of the area regarding where inundation levels will extend to, whether relocation is necessary for them and how long until the project is started. This essentially has prevented landholders making personal and financial decisions. Some landholders appeared to be well informed as to the extent of inundation on their individual properties, however this was not common.

The means by which the proponent has notified affected landholders, informed the affected communities and conducted any preliminary consultation has been largely perceived within the communities as ineffective and often inappropriate. There exists a strong desire within the community to be not only well informed but actively involved in the development proposal process. It was stated by residents, industry and producer groups that sound two-way communication between the community and the proponent was the most effective means of mitigating impacts of the proposals within the communities concerned.

Recommendations:

7. Proponent must ensure that marginalised groups such as the elderly and women within the communities are included in the consultation process.
8. The consultation process must be physically accessible to those communities involved i.e., the location and timing of public meetings and information services must be equally accessible to people from the upper reaches of the Boyne and Calliope catchments.
9. The proponent needs to engage in more individual 'on property' consultation with potentially affected landholders in or adjacent to inundation areas.
10. The means by which notification and consultation is undertaken by the proponent must improve on its current status in the community.
11. The proponent should seek to incorporate the knowledge of local residents such as historical flood levels which would improve decision outcomes on location of structures, make the proposal work at a local scale and increase community participation
12. The Community Reference Group and other groups in the region need to be aware of the considerable public interest and desire for participation in the development proposal process.

Access Issues

Decreased access to residences, properties and the local area, longer travel distances and prolonged flooding of local roads were major concerns for communities adjacent to the proposed water bodies. Works associated with sections of the Dawson and Bruce Highways and the Gladstone-Monto Road being affected would result in increased travel time to work and reduced access to community and financial services in the urban centres.

The acceptability of the Gladstone Area Water Board proposals within the affected communities may rest heavily on the receipt of tangible infrastructure and service provision benefits generated by the proposals. These would have to be sufficient enough to compensate the disruption associated with the relocation of transport infrastructure and the perceived long term absence of service provision to the communities of the Boyne Valley and Calliope Valley to a lesser extent.

If the Gladstone-Monto Road relocation and upgrade results in improved accessibility to the Boyne Valley, this may in turn provide a potential tourism resource to the local communities, given the proposed siting of the upgraded road and the proximity to significant natural areas such as Kroombit Tops and Mt Castletower National Parks.

Primary Production

In assessing the potential effects of both proposals on viability of primary producers in the region, indirect costs such as the disruption of co-operative relationships between adjacent farms, in terms of shared labour and infrastructure must be incorporated. Accounting for impacts on regional primary production must not be restricted to those farms directly impacted through inundation or transport infrastructure relocation.

Disruption of transport infrastructure costs need to be evaluated in terms of effects on viability of producers, increased transport costs of feed and fertiliser, and increased distances and reduced access to regional markets.

Water access issues such as potential fencing costs, ponded pastures and construction of new yards, ownership of property parcels and farm infrastructure need to be negotiated with landholders in the buffer zone.

There was overwhelming support in the broader community for providing primary producers adjacent to the proposed water bodies with access to the water resources generated by the development as a integral mitigation measure.

Commercial Fishing

There has been considerable concern expressed within the general and commercial fishing communities over the potential impacts of the proposals on fish breeding habitat, environmental flows of the Calliope River and reduction of water quality. There is concern over the implications this has for the immediate and long term viability of the commercial fishing industry in the region. There appears to be strong feelings amongst the commercial fishing industry of disenfranchisement from the process.

Recommendation:

13. The extent of economic and social impacts of the proposals on the commercial fishing industry and the potential of the proposals to affect its viability needs to

be recognised by the proponent and relevant government bodies. The commercial fishing industry and supporting industries represent a major organised stakeholder in the proposed developments and should be recognised and referred to as such. The present and future water requirements for viable commercial fishing in the region should be given equitable consideration to those water requirements of mineral processing and manufacturing industries. The present and future social and economic contribution of the industry to the regional community must be explored in detail and given due consideration in any future IAS conducted.

14. The proponent undertake a holistic benefit-cost analysis that accounts for negative impacts such as the loss of income to the commercial fishing industry and associated service industries.

Property availability

A number of landholders have stated their intent on continuation of primary production following relocation, retaining their livelihood and occupation in the region. It also appears that most affected landholders who were interviewed believed that compensation from the Water Board would be insufficient to re-establish a viable property of similar standing as their current properties. This is exacerbated by the belief that no suitable properties are available within the district and that the characteristics of their present properties provide them with a particular market niche in breeding or fattening of cattle or production of a particular fruit crop. For example once the remaining riverine flats along the Boyne and Calliope rivers are inundated, this land is simply no longer available for production in the region.

There is also strong evidence that the feelings amongst both the affected landholders and the broader community are that compensation offered by the proponent must be more than the estimated market value of any property.

There is also a need for strong consideration of the cumulative impacts of proposed expansion of industrial, extractive industry and urban land uses in the region and the capacity these factors have in reducing the availability of rural land suitable for the relocation of rural people and producers displaced as a result of the proposed water infrastructure developments.

Recommendation:

15. As a component of the proponent's IAS, a register of available suitable properties or land in the region could be compiled. By doing so an assessment of the probability of producers re-establishing on suitable (if not equitable) properties in the region or district could be assessed. This would also contribute to the evaluation of resumed properties in terms of scarcity or otherwise of the properties physical and production potential attributes.

Compensation Issues

Several aspects of compensation were raised by the affected community which may be incorporated into the compensation plan of the proponent. These included; swift settlement following the development decision, a desire for negotiation, inclusion of infrastructure and maintenance costs incurred since the announcement of the proposed development, value prescribed to potential future production from their property, loss of lifestyle and reduced quality of life, the lack of available land to relocate to and the need for compensation to be more than estimated market value re-establish a viable property.

Flooding in the local communities

Serious concerns exist regarding safety, loss of property, disruption of access and viability of businesses through increased or prolonged flooding in the affected communities.

Recommendation:

16. Communities need to be made aware of any measures to reduce the potential increase in flooding intensity or frequency during and following construction. Disruption of access of rural people to service centres must be minimised. Safety considerations regarding the upgrade of the Awoonga Dam need to be addressed within the communities of the Lower Boyne Valley and those below the Dam wall. The perceived structural instability of the Awoonga Dam wall, both present and following completion of the proposal, may seriously reduce the acceptability of the proposal.

Regional development and community change

The broader regional development context of the proposed Gladstone Area Water Board developments is one of six major development projects 'committed' to the Gladstone-Calliope Region (largely in Calliope Shire) and four further projects 'under study' within the region within a three to four year time frame. The projects are concerned with manufacturing, mineral processing, mining and infrastructure development. This regional development has major implications for the communities of the region.

Even if Impact Assessment Studies including Social Impact Assessment are conducted for individual projects, the cumulative incremental impacts of several large scale projects within a relatively short time frame, on a given population need to be recognised and given sufficient consideration at the individual project impact scale.

The absence of a 'rural support worker', 'community resource officer' or 'youth support worker' from Calliope Shire also contributes to the reduced capacity of the affected communities to respond to the potential and current social impacts of the proposed Water Board developments. The closest centre at which these services are located is within the City of Gladstone, which despite its geographical proximity, services of this nature are unknown or are essentially perceived inaccessible by the communities of the rural hinterland adjacent to the proposed developments.

Recommendations:

17. The magnitude of the proposed Water Board developments and the extent of impacts, in terms of the number of communities in Calliope Shire affected, should necessitate Calliope Shire Council seeking funding through the Department of Families, Youth and Community Care (Qld.) to appoint a rural support worker or community resource officer. The appointment of such a person or persons would need to occur from the immediate future until several months following project completion at the minimum. The provision of such a service locally, in the communities affected by the proposals, would contribute to reducing some negative social impacts of the proposals.
18. Strong consideration must be given in the proponent's mandatory Impact Assessment to the implications these multiple regional development projects may

have regarding the potential cumulative social impacts on the communities of the region.

Indigenous Peoples & Native Title Issues

Native Title claims by the Gooreng Gooreng and Bailai peoples have been identified as including land and water areas in or adjacent to the proposed development locations. The Gurang Land Council has acted as the representative body for these claimant groups. There are other indigenous residents in proximity to the proposed developments who are also stakeholders in the proposals.

Members of the study team had met and spoken with individuals from various agencies and community groups associated with indigenous people in the Gladstone-Calliope region, although no formal submissions were received. It was indicated however during these discussions that indigenous people and groups within the area must be recognised as stakeholders in the development proposals. Consultation and negotiation, accounting for appropriate protocols and process should be incorporated into the proponents mandatory Impact Assessment. This should be undertaken in partnership with the Office of Aboriginal and Torres Strait Islander Affairs, local representative Land Councils in the region and the local indigenous community.

Final comments

It is apparent that the impact of the proposals is not restricted to the future or possible circumstances of potentially affected landholders and communities. The proposals of the developments alone are in effect altering present land values, infrastructure maintenance and investment, property planning, personal stress and community cohesion within some areas. There has been a real social and economic cost of the development proposal process alone.

The responses gathered from community members through the survey and interview process indicates the community is highly aware of the diversity of issues and the nature of the change in the structure and character of their communities. It is also apparent that no single issue is prominent or foremost for residents of Calliope Shire. It is necessary that the proponent recognises that the Shire community consists (in terms of what they perceive as important issues) of different groups with a diverse range of local and regional priorities. Similarly there is no consensus within the community as to what might be done to address the issues identified. This has significant implications for the nature of the consultation program that must be undertaken during the proponents' IAS and the need to recognise the diversity of issues and impacts associated with the proposals on the all members of the community at property, local and regional scales.

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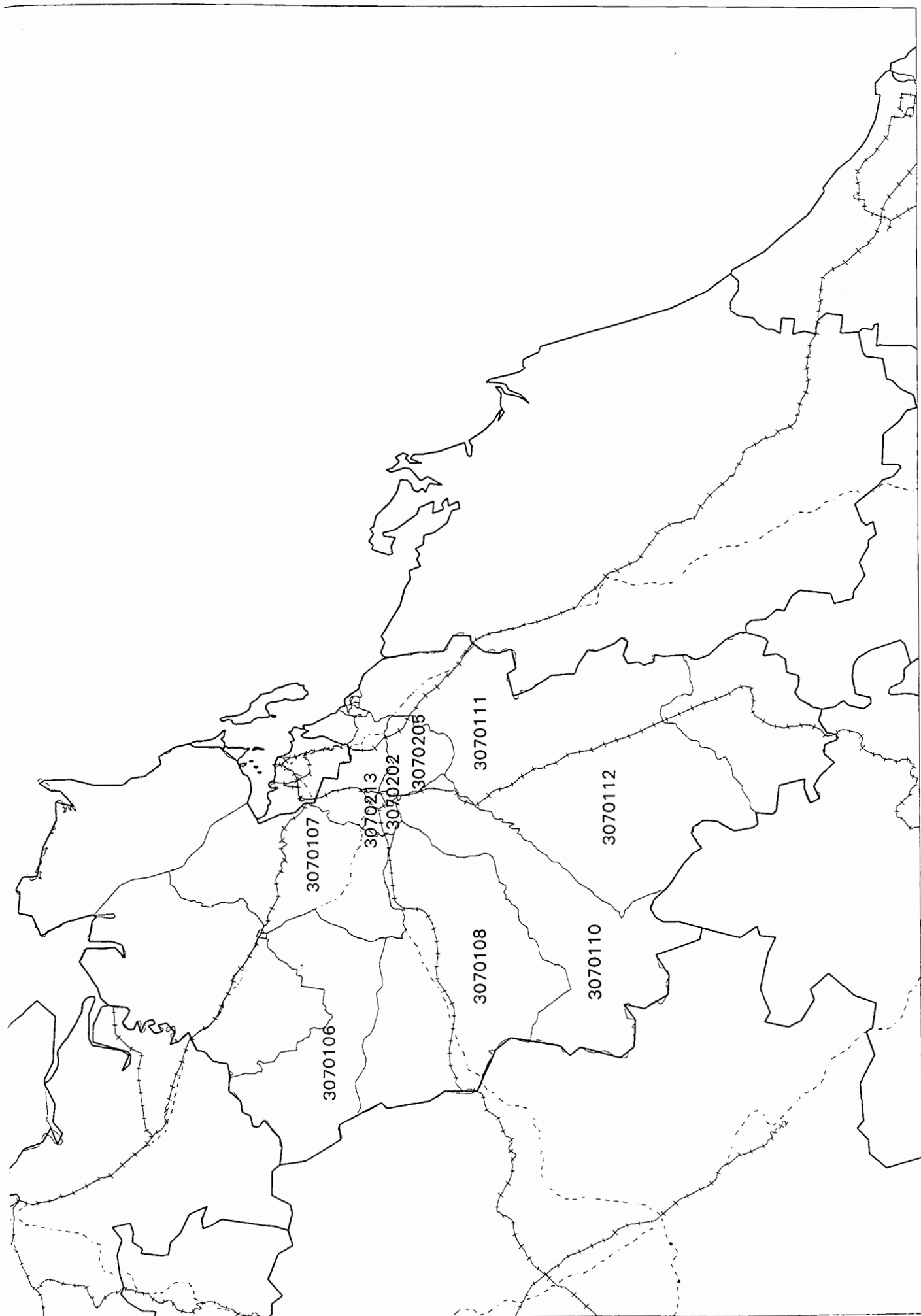
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Appendix A

Map of *Selected Collection Districts* from Calliope Shire Statistical
Local Area (1991 ABS Census of Population and Housing).

Refer to notes on page 14, *Source of Profile Data*.



Appendix B

Distribution of *Community Survey* (mail survey) – areas selected from
Calliope Shire.

Area Supplied

The information shown on this map is provided for convenience and should be considered approximate only. No responsibility will be accepted for any costs incurred as a result of inaccuracies, omissions or errors associated with this map.

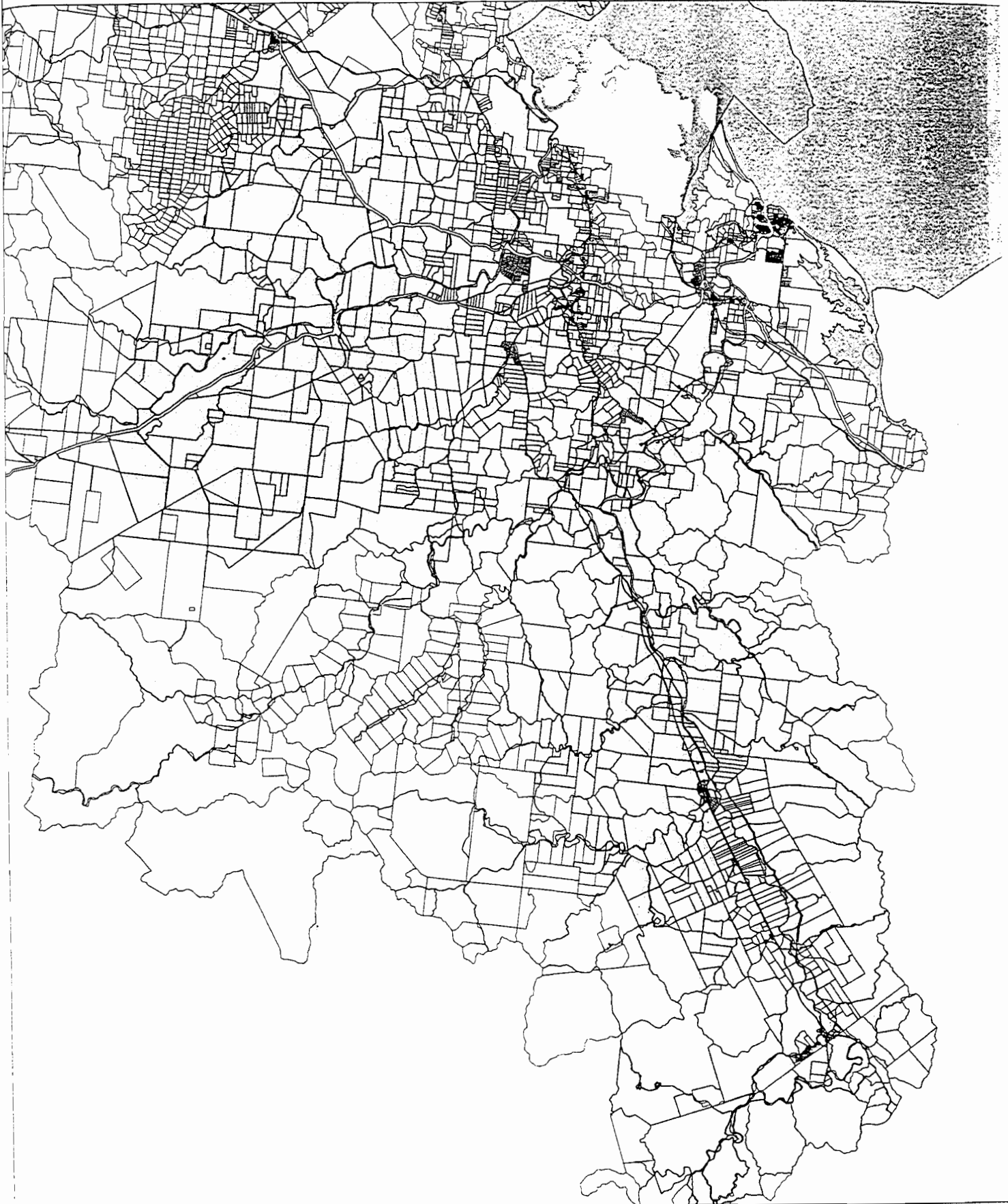


Calliope Shire Council

Produced by: **MOB**

Information Technology Section

Date: 18th September 1999



Comments:



Scale
1:410000



Appendix C
Community Survey

Independent Social Impact Assessment of the proposed Calliope River Dam and Awoonga Dam Upgrade

Community Survey

A project of the: Rural Social and Economic Research Centre
 Central Queensland University
 Rockhampton QLD 4702

Prepared for: The Calliope Shire Rate and Taxpayers Association, Queensland

Research Officer: Mr Bruce Taylor
 Ph: 07 4930 9837

Principal Investigator: Dr Salim Momtaz
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Associate Investigator: Dr Stewart Lockie
 Ph: 07 4930 6539

Name:

ABOUT THIS SURVEY

Thankyou for agreeing to participate in this community survey.

This survey is being conducted as part of an investigation into the potential impacts of proposed dam developments on the Calliope and Boyne Rivers on residents and anybody else affected by these developments. The social impacts of developments like these can be both positive and negative, so it is important that development decisions are based on the best understanding of the likely impacts possible. Any way in which you believe that either yourself, or another community member, may be affected by the proposed developments is relevant to this study. It is only through a thorough exploration of people's concerns and ideas that good decisions will be made and the maximum positive benefits from those decisions delivered to the community. Your input is vital to ensuring that this happens.

This is an independent study that is being conducted by the Rural Social and Economic Research Centre, CQU, for the Calliope Shire Rate and Taxpayers Association and funded by the Department of the Premier and Cabinet, Queensland. The study will not be influenced by either the Gladstone Area Water Board (who are proposing the developments), the State Government, or any other interest group.

In doing this we are trying to identify all potential stakeholders. If you know of any adult members of your household, or anyone else, who have not been invited to participate, please let us know so that we can contact them too.

All the information you provide is completely confidential. Your name will only be used for administrative purposes. There are no right or wrong answers, so please be as honest as you can. However, if you do not wish to answer any questions, please feel free not to do so. Also, we have tried to leave plenty of room to answer questions, but if you find there is not enough room, please feel free to attach extra sheets.

We would very much appreciate it if you could answer the questionnaire in the next week or so and return it in the reply paid envelope supplied.

If you have any questions, difficulties or concerns, please contact Bruce Taylor at the address shown on the previous page.

Thankyou for your time and assistance.

BACKGROUND

To begin with we'd like to ask you some background questions about yourself. This is important so that we can learn a little about the people who will be affected by the proposed developments.

1. How long have you lived in your current residence? _____ months/years

2. Have you lived anywhere else in the Gladstone/Calliope region? If so, where? _____

3. What would you describe as your major occupation? _____

4. What other interests, occupations or pastimes do you participate in?

5. What is your marital status? (Please tick) ☐ never married
☐ divorced/separated
☐ married/de facto
☐ widowed

6. Do you have any children? ☐ YES
☐ NO

IF YES

6a. What are the ages of your children? _____

7. What is the highest level of education you have completed?

- ☐ primary school
- ☐ less than Year 10
- ☐ intermediate certificate/Year 10
- ☐ leaving certificate/HSC
- ☐ trade certificate
- ☐ tertiary degree/diploma

8. What is your relationship to other people living in the house? _____

9. What was your age on your last birthday? _____

10. Are you: ☐ female
☐ male

11. Are you a member of any community groups based in this area? If so, which ones?

PROPOSED WATER RESOURCES DEVELOPMENTS

12. Before you received this survey, were you aware of plans by the Gladstone Area Water Board to:

- upgrade the existing Awoonga Dam? ☐ YES
☐ NO
- build a new dam on the Calliope River at Castle Hope? ☐ YES
☐ NO

13. IF YES

- When did you become aware of the Water Board proposals?

- How did you become aware of the Water Board proposals?

REGIONAL AND COMMUNITY ISSUES

The next set of questions is designed to let you tell us how important you think a range of issues are that have emerged during preliminary consultations by the Rural Social and Economic Research Centre. Not all the issues relate directly to water.

Please indicate how strongly you agree or disagree with the following statements by circling the appropriate response to each question.

	strongly agree	agree	neither agree nor disagree	disagree	strongly disagree	don't know
Residents of the Boyne Valley have received very little benefit from the existing Awoonga Dam	SA	A	N	D	SD	DK
Dam construction in the Calliope or Boyne Valleys would give a major boost to the local economy	SA	A	N	D	SD	DK
Unemployment is THE major social problem in the Gladstone/ Calliope region	SA	A	N	D	SD	DK
Few opportunities exist for people displaced by dams to find similar land to the land they have lost	SA	A	N	D	SD	DK
A dam on the Calliope River would have few impacts on those landholders who were not flooded	SA	A	N	D	SD	DK
A dam on the Boyne River would have few impacts on those landholders who were not flooded	SA	A	N	D	SD	DK
Compensation for inundated land needs to be more than its market value	SA	A	N	D	SD	DK
Estimated demands for water in Gladstone are over-rated	SA	A	N	D	SD	DK
Alternatives to major dam construction have been thoroughly investigated	SA	A	N	D	SD	DK
The level of community consultation regarding a proposed dam on the Calliope River has been inadequate	SA	A	N	D	SD	DK
The level of community consultation regarding an expansion of the Awoonga dam has been inadequate	SA	A	N	D	SD	DK

	strongly agree	agree	neither agree nor disagree	disagree	strongly disagree	don't know
Careful catchment management will be needed above any new or expanded dams to ensure high water quality	SA	A	N	D	SD	DK
The personal impact of losing land cannot be compensated	SA	A	N	D	SD	DK
Roads in the Boyne and Calliope Valleys are totally inadequate	SA	A	N	D	SD	DK
The relocation of road sections will greatly inconvenience local residents	SA	A	N	D	SD	DK
Local farmers should be given access to water from dams for irrigation and stockwater	SA	A	N	D	SD	DK
Local businesses will be get a real boost from water development	SA	A	N	D	SD	DK
The need for industrial water supply in Gladstone outweighs the cost to individual landholders of dam construction	SA	A	N	D	SD	DK
The lengthy decision-making process on major dams makes it impossible for local businesses and landholders to plan properly	SA	A	N	D	SD	DK
The Calliope Valley is well suited as a site for a major dam	SA	A	N	D	SD	DK
Dam developments will go ahead in the Boyne and Calliope Valleys regardless of what local people think	SA	A	N	D	SD	DK
Adequate information about which land will be flooded has NOT been supplied	SA	A	N	D	SD	DK
Proposals to build dams have caused conflict among members of the local community	SA	A	N	D	SD	DK
The most important thing at this stage is to reach a quick decision	SA	A	N	D	SD	DK

11. What do you see as THE most important issue facing residents of this area?

13. What do you think needs to be done to address this issue?

14. Has this community been effected by any other water related issues in the past? If so, what?

EFFECTS OF PREVIOUS DAM DEVELOPMENT

The next set of questions is concerned with the effects of previous dam development in the Gladstone/Calliope region.

17. Do you believe you were affected in any way by the construction of the existing Awoonga Dam on the Boyne River? If so, how (please remember that impacts may be both negative and positive)?

18. Do you believe that any other members of the community, or businesses, were affected in any way by the construction of the existing Awoonga Dam on the Boyne River? If so, how (please remember that impacts may be both negative and positive)?

EFFECTS OF CURRENT PROPOSALS

The Awoonga Dam first filled in 1984. The Gladstone Area Water Board now proposes to double the capacity of this dam by raising the height of the dam wall to FSL E1 53.50.

24. Do you believe that you will be affected in any way by the upgrading of the existing Awoonga Dam on the Boyne River? If so, how (please remember that impacts may be both negative and positive)?

25. Do you believe that any other members of the community, or businesses, will be affected in any way by the upgrading of the existing Awoonga Dam on the Boyne River? If so, how (please remember that impacts may be both negative and positive)?

The Gladstone Area Water Board is proposing to construct a new dam at Castle Hope on the Calliope River. This dam will hold about as much water as the existing Awoonga Dam.

26. Do you believe that you will be affected in any way by the construction of a dam at Castle Hope on the Calliope River? If so, how (please remember that impacts may be both negative and positive)?

27. Do you believe that any other members of the community, or businesses, will be affected in any way by the construction of a dam at Castle Hope on the Calliope River? If so, how (please remember that impacts may be both negative and positive)?

DECISION MAKING PROCESSES

28. What input have you been given so far into decision making processes concerning these developments?

29. What input would you like to have into decision making processes concerning these developments?

30. What can you and other members of the community do to ensure that negative impacts from these proposals are minimised, and that positive impacts are maximised?

OPPORTUNITIES AND ALTERNATIVES

31. What opportunities do you think will be opened up for local people and businesses if either of these dams go ahead?

32. Are there any alternatives to the construction of these dams that you think will better benefit the people of the Calliope and Gladstone regions? If so, what?

33. Thankyou for your time and patience in completing this survey. If there is anything you would like to add, please feel free to do so.

[illegible]

Appendix D

Tabulated responses to *Community Survey* questions, Sections 5.0 & 6.0.

Tabulated responses to *Community Survey* questions. (Section 5.0 and 6.0)

Question 19 personal effects of Awoonga Upgrade

Positive personal effects of upgrading Awoonga Dam as stated by survey respondents

Improved water access/supply for irrigation and domestic needs	12	(13)
Employment generation for self and/or children	8	
Indirect benefits from improved / revitalised local economy	7	
Increased recreation opportunities	6	
Gladstone –Monto Road upgraded	4	
Property inundated but retiring anyway	3	
Increased land values	1	
	41	(42.7%)

Negative personal effects of upgrading Awoonga Dam as stated by survey respondents

Access to property and local area decreased, longer distances, prolonged flooding of routeways. Gladstone Monto Road cut – increase travel time to work, major markets, services, increased operating costs	20	(21)
Most productive/valuable land lost to inundation/resumption	17	(18)
Uncertainty of water / inundation levels on property	12	(13)
Safety concerns for dam wall stability, increased flooding intensity in urban areas	9	(10)
Rates and water costs increase	5	
Local food production decreased, declining viability and productivity of properties	2	
Will loose job with the inundation of Taragoolla Limestone quarry	3	
Reduced property values	2	
No benefit from extra water	2	
Restrictions on land use in catchment area increased	2	
Recreation area at Awoonga Dam lost		
	74	(77.1%)

Q20 effects of expanding Awoonga on others

	Freq.	Percent %
Not sure, don't know	19	10
Graziers, irrigators & community loose valuable, flat productive land to inundation – and income	90	46
Access problems for properties along the Boyne river, relocation of rail and road infrastructure – disruption	22	11
Gladstone industry will benefit from improved water supply	19	10
Industry will benefit at community expense	3	
Industrial growth will benefit community	1	
Will relieve conflict over underground water supply in region (QCL etc)	1	
Continued inefficient water use by urban residents and industry	1	
Rural residents will benefit from access to water	6	
Loss of jobs and industrial limestone supply at Taragoolla through inundation	4	
Lower areas of Calliope Valley will flood following heavy rain	1	
No	31	16
Inequity of water costs, increase in rates affecting the aged and other low income earners in community	5	
General positive	10	
Some benefits to remaining farmers		
Short term employment generated during construction and for relocation of	9	

transport infrastructure	
Improve local business through growth in recreation and Tourism potential of Boyne Valley	10
Decline in rural communities	10
Gladstone Monto Rd upgrade post construction	2
Loss of recreation amenity and facilities on the Boyne River and Lake Awoonga	4
Construction of Fish ladders	
Contamination of water supply – flooding old mining areas	1
Loss of quality of life, safety of residents and fisherman below the dam wall	4
Loss of potential mineral resources through inundation	2
Loss of jobs for those who labour on properties.	1
Total	256
n=194	
mean responses=1.3	
other=75 or 39%	

Q21 personal effects of Calliope

	frequency	%
Not affected, no, not this area	94	32
Not directly affected, don't know	12	
Uncertainty over water levels, inundation of property, relocation?	6	
Uncertainty over water supply for pumping, access to stock	6	
Will have to relocate, leave community	2	
Increased, prolonged flood levels	4	
Loss of viable property, business, best land	10	
Loss of land, property	9	
Loose house, home, relocation	3	
Loss of access, routeways, increased freight costs	8	
Stock access, migration affected	1	
Emotional, financial, personal stress	5	
Prolong present employment , generate employment	6	
Relocation of transport infrastructure, resumption of land, affect viability	4	
Loss of recreational amenity, value , on the Calliope River (swimming holes, camping areas, fishing spots)	27	(14)
Loss of tourism potential, eco-tourism, undammed natural Calliope R	1	
Concerns of environmental nature including the destruction of fish habitat, siltation of waterways, restricted ecological flows, increased pollution with industrial growth, loss of environmental resource to community.	28	(14)
If compensation for disruption/inconvenience above market value possibly a positive effect	2	
Belief that castle hope Dam is unviable, shallow area, high evaporation rates	7	
Increased water supply for property, irrigation, stock access, domestic use	12	
Traffic flow past residence reduced following construction – but increased noise and traffic during construction phase	1	
Improved local roads	4	
Property values increased	6	
Reduced quality of life way of life /lifestyle/heritage(pop decline in valley)	5	
Reduced local access to water (bores, springs, water table, increasing salinity)	3	
High cost of mains water despite dam proximity	1	
Loss of neighbours and friends through inundation	2	
Calliope river will become another Boyne River, should not be dammed	12	
The diversion of available funds to the calliope area negative impact on residents of the Boyne Valley	1	
Need more information	6	
Increase in recreatioanl facilities	4	
Total	292 (198)	
n=226		

Q22 effects of Calliope on others

	frequency	%
No	29	14
Don't Know, unsure	22	10
Community adversely affected – no previous resumption in area	12	
Short term employment generation in construction and service provision to construction.	10	
Possibility of local employment	5	
Environmental concerns of fish habitat loss, siltation of waterways, poor environmental flows	16	8
Large number of recreational and commercial fisherman with reduced catches and decline in related services	34	16
Landholders affected through inundation resulting in relocation, access problems, loss of valuable land	65	31
Disruption or loss of lifestyle	4	
Result in overuse of remaining productive farm land	1	
Improved water supply to Calliope Shire urban centres such as West Stowe, Yarwun and River Ranch.	4	
Calliope used as wealth generating resource for Gladstone	1	
Major local access problems associated with the inundation and relocation of the Bruce and Dawson Highways	13	
Redevelopment (improvement) of moura rail link and Dawson Hwys	2	
Increase land values in area	1	
Industry will benefit from water supply	13	
Loose tourism potential for Boyne Valley and flow ons for residents	1	
Remaining farms will benefit from improved water supply	8	
Loss of jobs including the East End quarry	2	
Changes in catchment landuse and natural landscapes	9	
Detract from existing recreational and tourist opportunities in the area especially downstream of the site lower river levels eg boat hire, historical village, camping and swimming areas, loss of natural tourism value of river.	4	
Yes effects on others	21	10
More information on proposals needed	6	
Improved recreation and fishing opportunities at new dam site	4	
Change in community structure, population	2	
CHD not viable	2	
Increased cost to taxpayers with infrastructure relocation	2	
General benefits for the local community	10	
Loss of friends, social network through relocation	2	
Loss of cultural heritage, old homes, family properties	4	
Decline in local population will impact adversely on local business	1	
Total	312	
n=211		
mean responses=1.5		

Q23 input into decision making

	frequency	percentage
None, no input	162	71
Had opportunity, but no input	3	
This (RSERC) survey	22	10
Attended community group meetings	3	
Informed through media	8	
Public forums, presentations	9	4
Public forums not a suitable avenue for many people, few other options available	2	
Petitions	2	
Contact with council members or water board members	1	
Receipt of information on proposals	2	
interview (RSERC)	1	
Lobbied state government ministers	1	

Wrote letter to the editor of local media	1	
Lodged objection	1	
Leave decision to government	1	
Government dictates process	2	
Minimal input at this stage	11	5
total	233	
n=227		
mean responses=1.0		
other=37 or 16%		

Q25 community mitigation

	frequency	Percentage
Community communication with proponent government, involvement, concerns registered with. consultation with proponent and others to ensure local benefit not only industry	45	28
Be informed	25	15
Sound IAS conducted	16	10
Support groups seeking community involvement	13	8
Use local member of parliament, council to achieve representation of views	12	7
Ensure locals are employed during construction phase	4	
Retrieve mill timber prior to inundation, proceeds to displaced landholders not proponent.	1	
Remove recreation restrictions from Lake Awoonga		
Stock dams with suitable native fish and construct fish ladders	3	
Hold/attend more community meetings	7	
Use media to pressure government and proponents	3	
Focus on positives and benefits of development, change in mindset	6	
Nothing	27	17
Seek fair, equitable outcome for rural people	2	
Communication between affected landholders, discuss problems	8	
Don't know	18	11
Fair compensation paid	5	
Protest	5	
Support proponent	3	
Think long term	7	
Move away	1	
Make decision soon	3	
Support developing industry in region		
Develop local EPA with teeth	1	
Appease majority	1	
Sack water board	1	
Total	217	
n=162		
mean responses=1.3		
other=61 or 37%		

Q26 opportunities for local people and business

	frequency	percentage
Reduced opportunities	2	
None, no opportunities	30	15
Recreation facilities	23	12
Tourism and related opportunities	18	9
Commercial fish farming	1	
Employment , income generation	37	20
Employment in Gladstone only	6	
Employment short term only	15	
Industry benefits from water supply	58	29
Only industry benefits from supply	9	
Local irrigation, stock access	17	9

Boost to Calliope economy	19	10
Better roads	5	
Improved water supply to residents	11	
Boyne valley residents would benefit from tourism development	1	
DK	15	
Industry related pollution	4	
Increased housing development in area	1	
General growth of community	2	
Benefits associated with increased population	5	
Total	279	
n=197		
mean responses=1.4		
other=61 or 31		

Q27 alternatives

	frequency	percentage
No alternatives to proposal	70	38
Don't know	30	16
Weirs on tributaries, barrages	5	
Feeder dams in hill country/ rolling dams on River tributaries	11	
Improve existing water efficiency of industry	11	
Recycling and water conservation options for industry, local councils and residents	21	11
Desalinisation, Research and development funds for desalinisation	26	14
No construction of dams	6	
Increased use of domestic rainwater tanks in urban areas	6	
Regulation, policy changes – limit use levels for industry	12	
Alternative sites for infrastructure development (Boat, Upper Glasford, Gossford and Baffle Creeks)	7	
Deep bores, sub-artesian supplies	3	
Pipe water from adjacent catchments (Fitzroy)	5	
Regional income through alternative industry, Tourism, natural environment.	1	
Reduce requirements for water – disincentives to industry	2	
Upgrade , dredge existing storages to increase capacity to negate the need for new storages.	2	
Use of 'pit water' from local mine sites, (ACL, Southern Pacific, QCL)	3	
Total	221	
n=185		
mean responses=1.2		
other=74 or 40%		

Rural Social and Economic Research Central Queensland University

The Rural Social and Economic Research Centre (RSERC) is a designated research centre of Central Queensland University and a constituent part of the Institute for Sustainable Regional Development. Academic members of RSERC are drawn from each of the five campuses located within Central Queensland. The Centre is also connected with similar Centres both nationally and internationally.

Centre Mission

The Centre's mission is to undertake research, within multi-focused programs, into the socio-economic well-being, social development and cultural attitudes of people, communities and organisations in the regions served by Central Queensland University.

The Centre's research and other scholarly activities are guided by principles of social justice, reciprocity and ethics.

Research Focus and Program Areas

As a leading rural social research centre, the RSERC acts to:

- focus the research activities of academic members and postgraduate students on issues of importance to regional and rural Australia
- contribute to theoretical developments which will answer existing questions and build knowledge about the place of the 'rural' in advanced society
- provide a basis for social development within the Central Queensland region
- as a major university-based research node, provide the opportunity for researchers within the University to have a formally-designated Centre with which to identify, as well as to facilitate linkages with researchers in other institutions in Australia and abroad
- obtain funding from external granting bodies to further the research of academic staff and postgraduate students

Through its social science research activities, CQU is involved with regional Australians in identifying and implementing sustainable social options in an effort to improve our future outcomes, and to address the challenges we all face. In providing advanced training for postgraduate students, the Centre is contributing to the professional development of those who will be employed in regional Australia as environmental planners, policy analysts, community workers, counsellors, group facilitators, extension officers, and as social researchers.

The Centre has identified a number of 'thematic' areas of research including:

**Sustainable Community Development
Agri-Food Restructuring and Environment
Health, Lifestyle and Human Performance
Heritage, Culture and Tourism**

Further Information

The Centre can be contacted by writing to The Director, Rural Social and Economic Research Centre, CQU, Rockhampton, Queensland, 4702, or by phoning 07 4930 6401 or faxing 07 4930 6402 or by E-mail n.wyer@cqu.edu.au. Home page is: <http://www.arts.cqu.edu.au/rserc/home.html>