2. Project Need

This chapter of the EIS examines the need for the Emu Swamp Dam Project. There are two options being considered for the Emu Swamp Dam Project:

- the Urban Water Supply Project ; or
- the Combined Urban and Irrigation Project.

The Irrigators Group are investigating funding options for their component of the project. The Urban Water Supply project will be adopted if the Irrigators Group cannot provide funding for the Combined Urban and Irrigation Dam. If the Urban Option receives the necessary government approvals and the Irrigators Group has not received funding the SSC will proceed with the Urban Water Supply Dam only.

The need for both the Urban Water Supply Dam and the Combined Urban and Irrigation Dam is described through:

- background information;
- water demand projections;
- assessment of the Project Alternatives; and.
- summary of the Project costs and benefits; and,

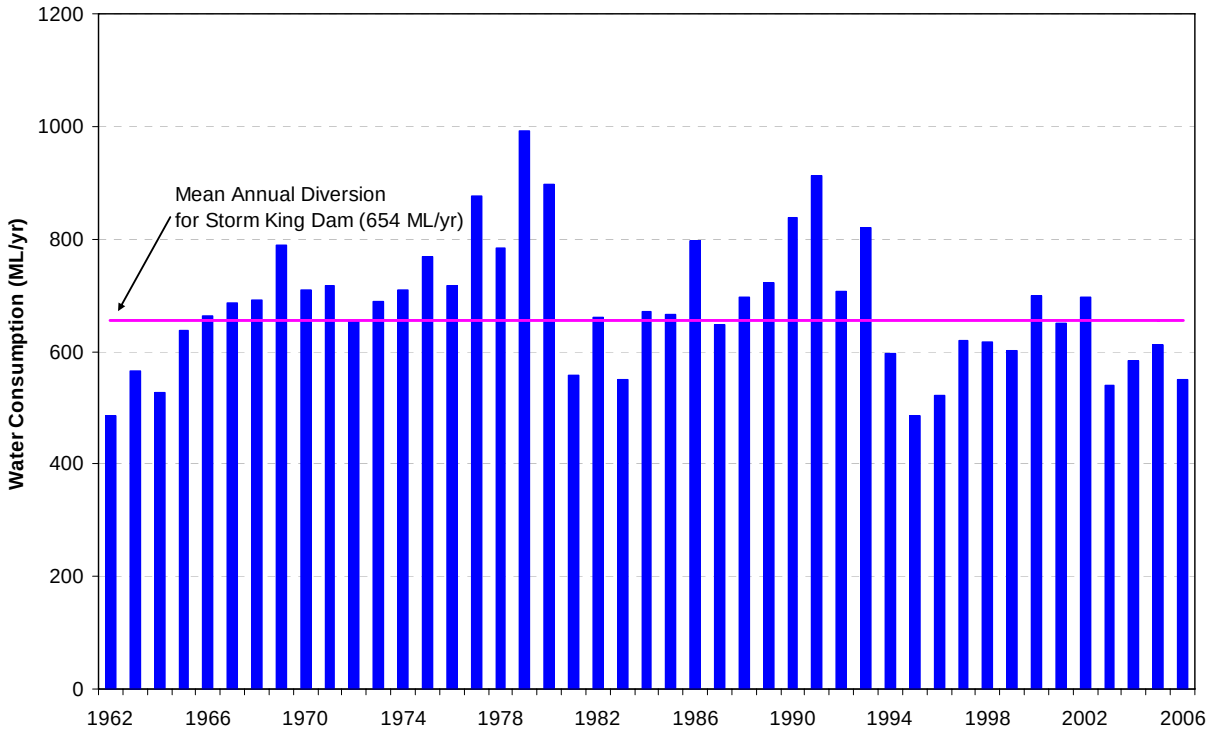
2.1 Background

2.1.1 Urban Water Supply Dam

Stanthorpe has experienced a long history of water supply uncertainty and challenge. Currently water is supplied to Stanthorpe from Storm King Dam which is located southeast of Stanthorpe on Quart Pot Creek. Storm King Dam can deliver a mean annual yield 654 ML/year at 94% monthly reliability (SKM 2007b). Storm King Dam is located upstream of the proposed Emu Swamp Dam and the Project is not expected to affect the operation of Storm King Dam.

Annual water consumption in Stanthorpe from 1962 to 2006 is presented in **Figure 2-1**. Water consumption in Stanthorpe ranges between 500 and 1,000 ML/year. Total water consumption in Stanthorpe has been severely constrained by restrictions for a long time because of low water levels in Storm King Dam. The town has had water restrictions for 4,972 days in the last 32 years, equivalent to 46% of the time (SSC, 2007a). Significant reductions in water consumption have been achieved by the introduction of universal water metering in 1981 and two part price tariffs in 1994. In spite of prolonged water restrictions Storm King Dam has been drawn to very low levels (less than 20% capacity) on at least four occasions. Currently (December 2007) the dam is again at very low levels (approximately 19% capacity) and is expected to run dry in early 2008.

■ **Figure 2-1 Stanthorpe Water Consumption 1962 - 2006**



2.1.2 Combined Urban and Irrigation Dam

Agriculture is a key part of the economy in Stanthorpe Shire. There is a range of fruits and vegetables grown in the area including apples, pears, stone fruit, lettuce, cauliflower, cabbage, capsicums and tomatoes. There is also a well-established wine-producing industry in the area. Droughts have been a threat to the local agricultural sector for many years.

Water supply development in the upper catchment of the Severn River has been considerable with construction of many dams and weirs on the streams and farms. Under current conditions there is very little opportunity for further development of water resources. There is also no significant opportunity for new agricultural land development in this area.

Farmers are seeking water with improved security because the water resources of the catchment are largely committed. A dam and piped distribution system will provide better security and farmers are willing to pay a relatively high price for a small volume of this water.

The Combined Urban & Irrigation Water Supply project depends on the farmers being able to fund the irrigation component of the scheme.

2.2 Water Demands

2.2.1 Urban Water Demand

The new urban water allocation is primarily required for Stanthorpe town but it will also be needed to meet future demands in other urban centres in the Shire e.g. Wallangarra, Ballandean, Glen Aplin, Applethorpe and The Summit. Wallangarra has a small unreliable water supply that also supplies the community of Jennings. Ballandean and Glen Aplin do not have public water supplies - SSC intends to extend water to these villages over the longer term but that does not form part of this project. Parts of Applethorpe presently receive water from Stanthorpe town. Increasingly, deficits in residential and non-residential demands across the Shire are being met by

carting potable water from standpipes in Stanthorpe town. To support the anticipated urban growth a more reliable supply needs to be provided.

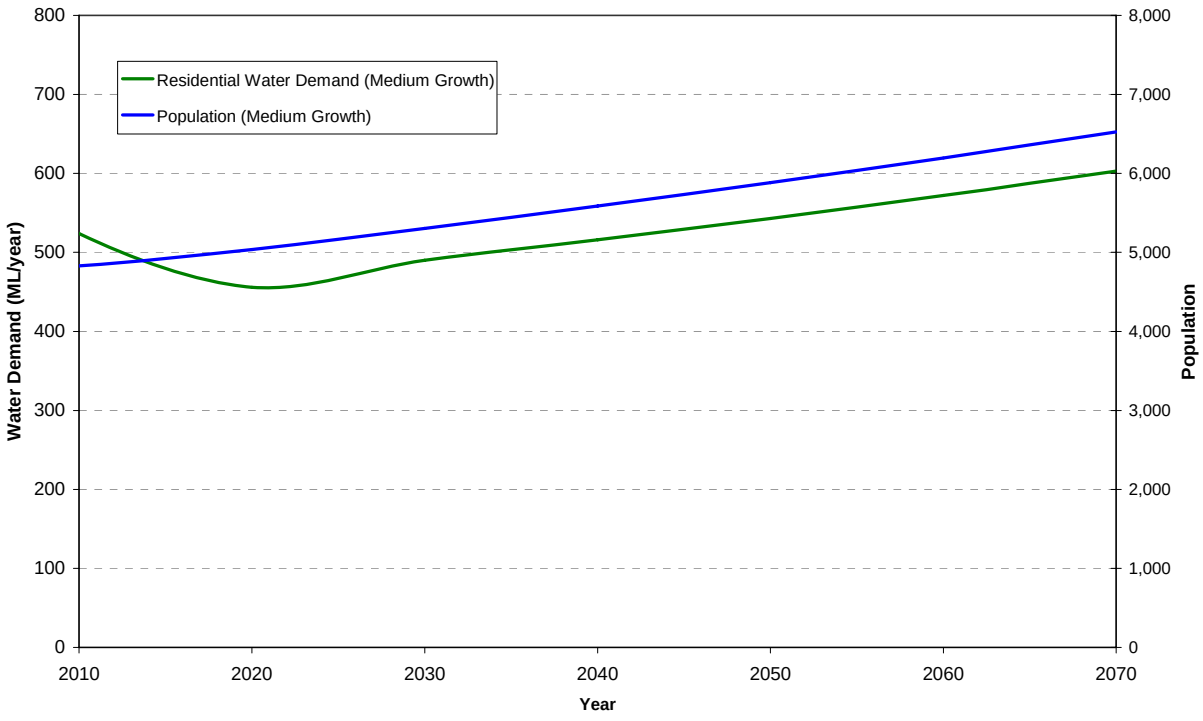
The urban water demands for Stanthorpe up to 2070 have been determined for residential and non-residential water demands (SKM 2007e).

The projected residential water demand for Stanthorpe is based on the following information:

- Population projections for Stanthorpe Shire up to 2026 (PIFU 2007);
- Population projections for Stanthorpe Shire beyond 2026 are based on growth rates (PIFU 2007) from 2021-2026; and,
- Residential water demand demands have been adopted from the South East Queensland Regional Water Supply Strategy (DNRM/BCC 2004) and from the SEQ Regional Plan (OUM 2005).

The projected populations and residential water demands for Stanthorpe up to 2070 are presented in **Figure 2-2**. **Figure 2-2** shows substantial reductions in per capita residential water demand will be achieved over the next 20 years through demand management, leakage reduction and associated processes. After 2020 residential water demand is expected to increase in line with population growth.

- **Figure 2-2 Projected Populations and Residential Water Demands (ML/year) for Stanthorpe**



The projected non-residential water demand for Stanthorpe is estimated based on historical data and recent development activity. Non-residential water demand was determined at 123 ML/year in 2005. Between 2005 and 2007 Stanthorpe Shire Council approved 110 ML/year of non-residential water demand including tourist accommodation facilities, industries including food processing, retirement accommodation facilities, retail and commercial premises and the College of Wine Tourism.

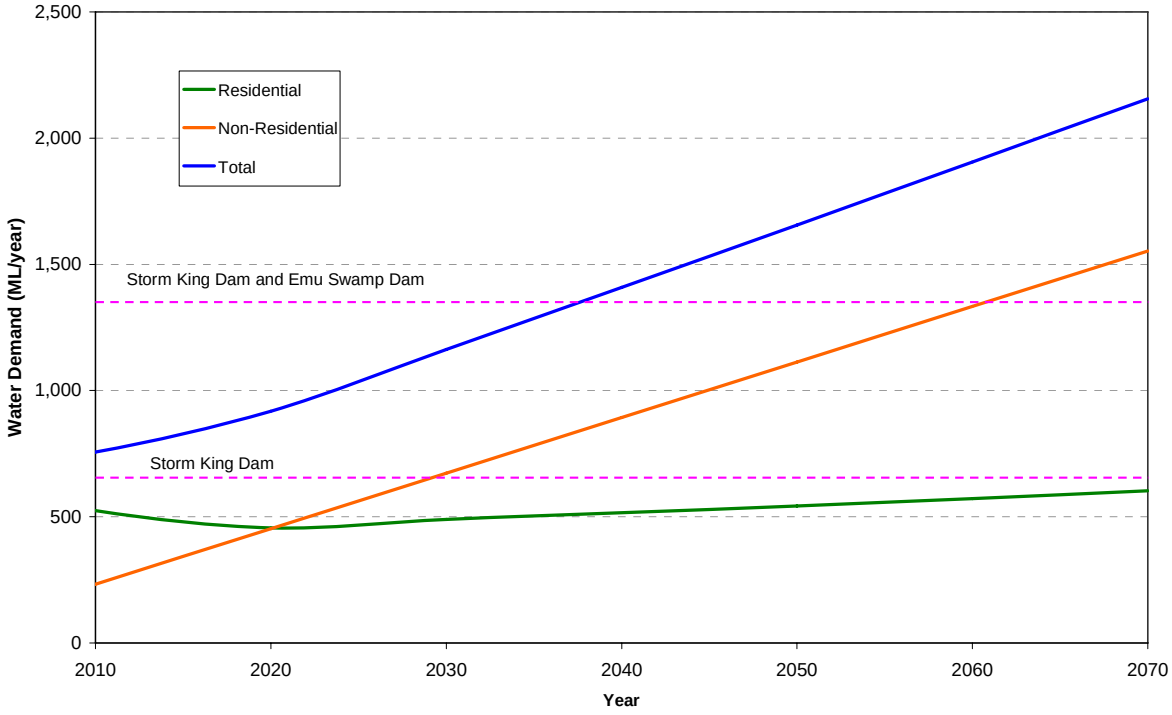
While the recent growth of non-residential water demand has been high in historical terms, there have been a number of additional large industry development enquiries. Typical industrial developments include fruit, food and meat processing, specialist breweries and manufacture of agricultural items. There have also been a number of

significant accommodation and tourism enquiries including resort / conference centres and associated accommodation (200 beds) and student accommodation (150 beds) for the new College of Wine Tourism.

The recent growth in non-residential water demand is assumed to be the high growth scenario. The medium growth scenario for non-residential water demand is assumed to be half of the high growth scenario.

Projected residential, non-residential and total water demands (ML/year) for Stanthorpe up to 2070 are presented in **Figure 2-3**. Over time the non-residential water demands exceed the residential demands. This reflects the changing character of Stanthorpe where the urban population is constrained (by young people leaving for education and services sector employment opportunities) while growing tourism and agriculture value-adding are increasing water demand in these sectors.

- **Figure 2-3 Medium Projected Urban Water Demand (ML/year) for Stanthorpe**



The total water demand for Stanthorpe in 2005 was 740 ML/year which is greater than the average annual yield for Storm King Dam (654 ML/year).

In the longer term Council anticipates the need to increase water supply capacity by 1,500 ML/year.

For short term affordability reasons Council has adopted an initial capacity of 750 ML/year for Emu Swamp Dam. A new 750 ML/year supply for town water in Stanthorpe Shire will provide for about the next 30 years but this could range from 20 to 60 years depending on the rate of growth.

2.2.2 Irrigation Water Demand

Granite Belt farmers are currently very efficient water users and have implemented a number of measures to reduce water use and losses from water storages. Historically, irrigation water supplies have been taken from local rivers and creeks, rainwater tanks, on-farm runoff dams to collect rainfall and groundwater resources (when available).

The existing mean annual irrigation entitlements for the catchment upstream of the proposed Emu Swamp Dam are estimated to be 20,700 ML/year. However, the Severn River system is ephemeral and the reliability of the irrigation entitlements is variable.

Stanthorpe irrigators and associated industries have sought additional irrigation water for many years. They have been interested stakeholders for the various investigations and planning processes that have been undertaken.

Ten farmers agreed to participate in an effluent reuse scheme in Stanthorpe approximately 5 years ago. This scheme provides a relatively small supply of water (300 to 400 ML/year) but it is very reliable. The irrigators involved in the effluent reuse scheme suggest that improved water security leads to improved agricultural product and farming sustainability. The extra water provided by the effluent reuse scheme has not resulted in an increase in irrigation area.

The water entitlement for the Irrigation component of Combined Project is 1,740 ML/year. This water represents an increase of 8% in water above existing irrigation entitlements for Stanthorpe Shire. The percentage increase in total irrigation water volume for the catchment would be much less because of the additional volume of direct rainfall and on-farm runoff collection. Farmers are interested in the Combined Project because the reliability of water from the dam will be much better than from natural runoff.

The potential take-up of additional irrigation water in the area from Ballandean to Stanthorpe was investigated some years ago through a public consultation exercise (GSA 1998). There were 237 respondents to the survey that said:

- 49% would be interested to improve existing cropping rather than to diversify into new crops and areas;
- 14% might be interested in the water depending on the price; and
- 37% were not interested in more water.

The distribution of requested irrigation water volumes for the Combined Project is presented in **Table 2-1**. The data in **Table 2-1** indicates that 86% of interested irrigators want less than 50 ML/year. This is a small volume for irrigation and confirms that the water is required for its higher security rather than to increase the cropped area.

- **Table 2-1 : Distribution of Requested Irrigation Water Volumes, 2007**

Requested Volume (ML/year)	Number of Irrigators	Percentage of Irrigators
300 – 100	2	4%
99 – 50	5	10%
49 – 20	25	51%
19 – 10	7	14%
9 and less	10	21%
Total	49	100%

2.3 Project Alternatives

A number of Project Alternatives have been considered for the Project. Project alternatives have been assessed for the Urban and the Combined Projects.

2.3.1 Urban Water Supply Project

The alternatives considered for the Urban Project include:

- no Project Alternative;
- demand Reduction;
- leakage Management;
- other Water Sources;
- regional Dam & Pipeline Options;
- other Regional Water Sources; and

- local Dam & Pipeline Options.

2.3.1.1 The No Project Alternative

The current water demand for Stanthorpe already exceeds the average annual yield of Storm King Dam. If the project did not proceed, Stanthorpe town would have to cap and reduce its current level of development.

Stanthorpe Shire is a vibrant community with strong expectations and opportunities for growth. There is considerable development demand in Stanthorpe and the provision of a reliable urban water supply is necessary for the future growth and sustainability of the Shire. Stanthorpe would miss out on commercial and industrial opportunities with the No Project alternative. The State would miss out on the economic flow-on benefits.

If Storm King Dam runs dry in early 2008 (as presently projected) water carting will be required. This is a very expensive operation and cannot be considered as a viable long term solution.

2.3.1.2 Demand Reduction

SSC has implemented a range of initiatives to reduce water demands over the past 32 years. These initiatives include community education, water efficiency, water pricing, water restrictions and penalties.

SSC is a WaterWise Council – it supports the WaterWise program with staff involvement, local media campaigns and information packages that are available on its website and at its offices.

SSC supports the Water Savings Targets for New Homes program under the Building Codes Queensland. This program sets a reduction target of 51 kL per year for a new Class 1 building in Stanthorpe Shire. It involves the mandatory provision of AAA-rated shower roses, dual flush toilets and rain water tanks for all new dwellings. This program has been in place since 1 July 2007. All new dwellings in the Shire are now required to have rain water tanks i.e. minimum 5,000 L tanks for single detached dwellings and 3,000L tanks for attached dwellings.

SSC supports the Home Waterwise Rebate program that provides financial assistance to existing households for retrofitting rain water tanks, water efficient clothes washing machines, dual-flush toilets, greywater systems, low-flow showerheads and swimming pool covers. There has been a very strong response to this program by Stanthorpe residents with a large number of new tanks installed.

SSC supports the Business Water Efficiency Program that provides financial assistance for water auditing and efficiency projects. SSC has reviewed the larger water consumers in the Shire and identified a significant water efficiency opportunity at an industry in Wallangarra. This opportunity would assist with Council's water supply challenges at Wallangarra but will not assist the Stanthorpe problem. SSC will continue to pursue business water efficiency opportunities in Stanthorpe.

SSC encourages water conservation by full cost pricing of reticulated water. Water pricing comprises an access charge and a volume based tariff.

SSC (2007a) has a prepared a Drought Management Plan. The plan includes six restriction levels which are presented in **Table 2-2**. The residential water consumption targets are comparable to those adopted in South East Queensland. Water restrictions are initiated when the dam volume falls below 70% and they become progressively more stringent as the volume falls. Since 1975 SSC has imposed water restrictions for 4,972 days, or 46% of the time (SSC, 2007a). Water restrictions are supported by a system of penalties including on the spot fines.

- **Table 2-2 : Water Restriction Trigger Levels and Consumption Targets**

Restriction Level	Dam Volume Trigger Level	Residential Water Consumption Target
0	-	300 L/person/day
1	70%	210 L/person/day
2	60%	190 L/person/day

Restriction Level	Dam Volume Trigger Level	Residential Water Consumption Target
3	50%	170 L/person/day
4	40%	150 L/person/day
5	30%	140 L/person/day
6	20%	130 L/person/day

Table 2-3 presents the watering restrictions for residential gardens and lawns. The Drought Management Plan also includes restrictions for the range of other water uses. The Restriction Level is currently (December 2007) at Level 6 and no external water use is permitted.

- **Table 2-3 : Water Restrictions Residential Lawns & Gardens, Stanthorpe Shire**

Area	Sprinkler Method	Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Garden Beds / Shrubbery Areas	Sprinklers	3 days/wk	Not allowed	Not allowed	Not allowed	Not allowed	No sprinklers	No sprinklers
	Hand hoses	3 days/wk	1 hour on 3 days/wk	1 hour on 1 day/wk	Not allowed	Not allowed	Not allowed	Not allowed
	Water cans, buckets	3 days/wk	1 hour on 3 days/wk	1 hour on 1 day/wk	1 for 1 hour on 1 day/wk	1 for 1 hour on 1 day/wk	Not allowed	Not allowed
	Micro-spray, drip irrigation with timers	3 days/wk	1 hour on 3 days/wk	1 hour on 1 day/wk	1 hour on 1 day/wk	Not allowed	Not allowed	Not allowed
Lawn Areas	Micro-spray, drip irrigation	-	1 hour on 3 days/wk	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed
	Hand hoses, water cans, buckets	-	1 hour on 3 days/wk	Not allowed	Not allowed	Not allowed	Not allowed	Not allowed

The projections of future water demand for Stanthorpe incorporate long term reductions from ongoing demand management (refer **Section 2.2.1**). It is essential that the current demand management practices are continued and enhanced – rain water tanks, water efficient plumbing, leakage management (refer **Section 2.3.1.3**), water pricing etc are all important elements of the Urban Water Supply Project.

2.3.1.3 Leakage Management

SSC has reviewed its water loss performance and prepared a Leak Management Plan (SSC 2007b).

The level of leakage is in the normal range for a system that is up to 53 years old. However, there is also an opportunity here for improvement and SSC has developed a Leakage Control Program for its water supply systems.

The projections of future water demand in Stanthorpe incorporate long term reductions from ongoing leakage management and reduction (refer **Section 2.2.1**).

2.3.1.4 Other Water Sources

SSC reuses 100% of its treated sewage effluent for the irrigation of recreational open spaces and for sale to ten horticulture farms. There is no surplus for other urban water uses.

There are small bores and wells in the region but they have limited capacity and most run dry during periods without rain. The groundwater resources of the Granite Belt area have long been acknowledged to be insufficient for any large scale water supply (DPI 1980).

2.3.1.5 Regional Dam & Pipeline Options

There are four water supply dams in the region i.e. Connolly and Leslie Dams near Warwick, Coolmunda Dam near Inglewood and Glenlyon Dam south of Stanthorpe.

Connolly Dam is a small dam that is owned by Warwick Shire Council. It is fully committed and is not even able to supply all of Warwick's water supply needs.

Leslie Dam is owned and operated by SunWater, a Queensland Government owned corporation. Leslie Dam is essentially fully committed to existing irrigation and urban consumers. There is a small urban allocation that Warwick Shire Council released for a development project (that did not proceed) and Warwick Shire Council is endeavouring to recover this for Warwick town's water supply needs.

Coolmunda Dam is owned and operated by SunWater. It is fully committed for irrigation and urban water consumers. There is a small urban allocation but it is essentially reserved for the town of Inglewood.

Glenlyon Dam is a Border Rivers Commission asset located in Queensland. SunWater is the contract operator of the asset. Glenlyon Dam is fully committed for irrigation.

It would be theoretically possible to purchase irrigation water allocations from Leslie, Coolmunda or Glenlyon Dams and to convert these to high reliability urban allocations. However, this would be very expensive and it is considered unlikely that sufficient water could be purchased at a reasonable price.

Pipeline from these dams have been investigated. Even with reasonably priced water purchases, pipeline schemes from Coolmunda and Glenlyon Dams are much more expensive than the Emu Swamp Dam project. The Leslie Dam pipeline scheme has a more comparable cost but is also more expensive than the Emu Swamp Dam project. The regional pipeline options costs are presented in **Table 2-4**.

- **Table 2-4 : Regional Pipeline Scheme Costs**

	Leslie Dam	Coolmunda Dam	Glenlyon Dam
750 ML/yr Supply			
Capital Cost $M	$40.5M	$61.8M	$58.0M
Annual Cost $/ML[(1)]	$5,462/ML	$8,174/ML	$7,526/ML
1,500 ML/yr Supply			
Capital Cost $M	$53.7M	$82.9M	$74.8M
Annual Cost $/ML[(1)]	$3,499/ML	$5,525/ML	$4,931/ML

Notes: (1) without capital cost subsidy

It is considered these options have very little chance of securing adequate water supplies and, with their high cost; they are not viable alternatives to the Emu Swamp Dam scheme.

2.3.1.6 Other Regional Water Sources

There are no regional groundwater supplies that might be delivered to Stanthorpe by pipeline.

The town of Warwick produces approximately 600 ML/yr of secondary treated sewage effluent (SKM 2004). Historically, all of the effluent has been delivered to a private landholder for pasture irrigation. Warwick Shire is developing an effluent irrigation scheme for its recreation areas. There is no effluent available to deliver to Stanthorpe for urban demands or for agriculture.

2.3.1.7 Local Dam & Pipeline Options

The need for additional water supplies on the Granite Belt has been long standing and various water supply dam options have been investigated since at least 1980. The options include:

- The Broadwater;
- Quart Pot Creek;
- Storm King Dam;
- Petrie's Crossing;
- Kia Ora;
- Emu Swamp; and
- Fletcher/Ballandean.

Where comparable yield values for these options are available they are summarised in **Table 2-5**. Comments on these and other options are also provided below.

Because dam yields are notorious for being revised downwards over time (i.e. with further drought experience), preference needs to be given to sites that are not marginal and have the potential for larger development.

Table 2-5 : Dam Sites, Preliminary Yield Assessments

Storage (ML)	Environmental Pass Flow (ML/d)	Licence Volume (ML/year)	Mean Annual Diversion (ML/year)	Monthly Reliability (%)
Quart Pot Creek, SKM 2007b				
6,500ML	0 – 15	500	298	58
40,000ML	0 – 15	1,500	611	38
Storm King Dam, SKM 2007b				
2,300ML(1)	0	700	654	94
3,220ML(2)	0	900	834	92
7,300ML(3)	0	1,500	1,330	88
Petrie's Crossing, SKM 2007b				
370ML	0 – 15	200	147	65
Ballandean, SKM 2007b				
8,000ML	0 – 15	1,500	1,373	90
Emu Swamp, SKM 2007b				
8,000ML	0 – 15	1,500	1,399	92
18,000ML(4)	0 – 15	1,500 / 1,780 (5)	1,418 / 1,104 (5)	94 / 62 (5)
28,000ML (4)	0 – 15	1,500 / 1,780 (5)	1,424 / 1,372 (5)	94 / 77 (5)

Notes: (1) existing Storm King dam (2) raised 1m (3) raised 4m (4) with 8,000ML reserve (5) urban / irrigation

The Broadwater dam site was investigated (DPI 1980, 1983, 1986, 1988) and discarded by DPI. The DPI reports have been reviewed (SKM 1997a). The potential yield is very limited and the site has not been considered further.

Several dam sites on Quart Pot Creek have been investigated (DPI 1980, 1983, 1986, 1988; SKM 1997a, 1997b, 2005, 2007b) but there is insufficient yield to provide even the required town water supply.

Storm King Dam has been investigated on several occasions (MJA 1983, 1984; SKM 1997a, 2005, 2007b) but, even with a raised spillway, the site does not have sufficient yield for the additional town water demand. Storm King Dam does not have an environmental flow requirement. Any change to the dam would trigger the need to provide for environmental flows and that would substantially reduce the indicated yields. Storm King Dam is not a viable option for the urban or the combined water supply.

Petrie's Crossing weir site on the Severn River has been investigated (SKM 1997a, 2005, 2007b) but it has insufficient yield to deliver even the required town water supply.

The Kia Ora dam site on the Maryland River in NSW has been investigated (SKM 1997b, 2007c) but it is not considered to be a viable option. A preliminary analysis suggests that, at full development, the site might be able to provide the required water supplies. However, more detailed yield assessments for other dam sites in the area have shown that these preliminary assessments have all over-estimated the available yield. It is likely that further work would demonstrate that even the indicated yield is not available. This site also carries risks arising from the reliability of information that was available to be used in the assessment; the unknown foundations; the high dam wall; the unknown side-spillway foundations; cross-border water transfers and delays and costs arising from the inability of the SSC to use its legislated powers (e.g. for compulsory land acquisition) in NSW.

The Fletcher / Ballandean dam site has been investigated (SKM 1997b, 1999, 2005, 2007b) and is considered to have the potential to deliver the required town and irrigation water supplies. The site has the same disadvantage as the Emu Swamp site i.e. a similar area of endangered remnant vegetation is impacted. However, the Ballandean site also causes more disruption to local roads and impacts a greater number of local landholdings. If the larger Combined urban and irrigation dam option was developed, there would also be impacts on the New England Highway, the Wallangarra Railway and other services. These impacts would substantially increase the dam cost at this site. For these reasons, the Emu Swamp dam site was preferred over the Ballandean site.

The Emu Swamp site has marginally better yield than the Ballandean site and can deliver the required town and irrigation water supplies. It also has the potential for a larger dam development.

Constructing two smaller dams rather than a single dam in the Emu Swamp dam area has also been examined. It was hoped that this approach would reduce the area of inundation and hence the impact on endangered remnant vegetation. Unfortunately, the area of impact is increased because a greater combined storage volume is required to achieve the same yield. This option has been discarded.

No other potential dam sites can be identified from the topographic mapping of the region. No other potential sites have been suggested by local residents or by Government agencies.

2.3.2 Combined Urban & Irrigation Water Supply Project

The alternatives considered to the Combined urban and irrigation project include:

- improved irrigation efficiency;
- other irrigation water sources; and
- other irrigation dam and pipeline options.

2.3.2.1 Irrigation Efficiency

Farmers in Stanthorpe Shire are very efficient water users. The vegetable growers, in particular, are considered to be at the forefront of water efficient practices. Local farmers have adopted water efficient technologies including micro-sprays, drip irrigation and soil moisture monitoring because water has been limited for many years. The farmers are also working with researchers to reduce evaporation and seepage losses from on-farm storages (McGrath pers.comm.).

2.3.2.2 Other Irrigation Water Sources

All available water sources are already being used by farmers in Stanthorpe Shire. Water sources being used include:

- extensive on and off-farm water storage and distribution systems;
- the limited groundwater resources and
- treated sewage effluent from SSC.

Treated sewage effluent from the Stanthorpe waste water treatment plant is supplied to ten farmers and provides a relatively small supply of water (300 – 400 ML/year) but it is very reliable. The farmers involved with the effluent

reuse scheme made a capital contribution to the scheme cost and pay an annual (per ML) charge for the water. The effluent is considered expensive but, for some of the farmers involved, it has allowed them to continue farming. None of the farmers has used the effluent to expand the scale of their farming operations.

2.3.2.3 Other Irrigation Dam & Pipeline Options

Alternate dam and pipeline options are the same as for the urban water project (refer to **Section 2.3.1.7**).

2.4 Project Costs and Benefits

2.4.1 Urban Water Supply Project

The capital cost, annual cost per ML and annual operations and maintenance costs for the 750 ML/year Urban Water Supply Project are summarised in **Table 2-6**.

- **Table 2-6 : Emu Swamp Dam, Urban Water Supply Project Costs**

	Urban Water Supply Project
Capital Cost $M	$44.5M
Cost $/ML(1)	$5,450/ML
Annual Operations & Maintenance Cost	$175,000

Note: (1) without capital cost subsidy

2.4.1.1 Economic Impacts and Benefits

The potential economic impacts of the Project are minor and are discussed in **Section 14** of the EIS.

The potential economic benefits from the construction of the Urban water supply project result from:

- employment (especially from the local and regional area) for the construction phase;
- purchase of raw materials and equipment for construction; and
- flow-on effects of construction expenditures in the local and regional economy.

The economic benefits of the Urban water supply project are presented in **Table 2-7**.

- **Table 2-7 : Economic Benefits of the Urban Water Supply Project by Region**

Expenditure category	Darling Downs Statistical Division	Queensland
Value added ($ million)	$8.6	$21
Employment	32	46

The provision of a reliable urban water supply would provide opportunities for future urban growth and residential development. This would allow opportunities for the development of a range of housing options to meet the needs of the Shire's current and future population.

Industry in the Shire would benefit from the Project through the provision of a reliable urban water supply. This would provide opportunities to support and attract new business and industry and expand existing businesses and industries within the Shire. This includes opportunities for development of a wider range of tourism facilities, including resort accommodation and convention centre, and a range of food production industries.

2.4.1.2 Social Impacts and Benefits

A number of potential impacts on the social environment have been identified including:

- impacts on rental housing availability and cost during construction;
- impacts on community facilities usage through an increase in population during construction; and
- construction traffic.

The social impacts of the project and management responses are discussed in more detail in **Section 14** of the EIS.

Local residents are generally supportive of the Project and believe that the provision of a reliable urban water supply is necessary for the future growth and sustainability of the Shire. Maximising the direct and indirect social benefits of the Project for local residents could be achieved through:

- ensuring local employment and training opportunities during construction, particularly for young people;
- ensuring access to the recreational and amenity values of the proposed dam; and
- ensuring business opportunities during construction are maximised, through the use of local goods and services.

2.4.2 Combined Urban & Irrigation Water Supply Project

The capital cost, annual per ML and annual operating and maintenance costs for the (750 ML/year + 1,740 ML/year) Combined urban and irrigation water supply project are summarised in **Table 2-8**.

Table 2-8 : Emu Swamp Dam, Combined Water Supply Project Costs (2007 Costs)

	Combined Project	Urban Component	Irrigation Component
Capital Cost $M	$82.0M	$28.1M	$53.9M
Cost $/ML[(1)]	-	$3,248/ML	$3,549/ML
Annual O&M Cost	-	$190,000	$430,000

Note: (1) without capital cost subsidy

The capital costs and cost per ML demonstrate that there is a significant economy of scale benefit that flows to the Urban project if the Combined water supply project proceeds.

It is considered that the costs for an irrigation only scheme would be prohibitive – the only opportunity for a significant irrigation water project is in combination with the urban water project.

2.4.2.1 Economic Impacts and Benefits

The potential economic impacts of the Project are minor and are discussed in **Section 14** of the EIS.

The economic benefits due to the Combined urban and irrigation dam are presented in **Table 2-9**.

Table 2-9 : Economic Benefits of the Combined Urban and Irrigation Dam by Region

Expenditure category	Darling Downs Statistical Division	Queensland
Value added ($ million)	$14.7	$35.8
Employment	54	79

The economic benefits to the town of Stanthorpe resulting from the operation of the Combined option will be similar to the urban option. The increase in water availability will allow growth in residential and industrial sectors to continue.

The increase in water availability for irrigation from the Combined urban and irrigation project will assist the agricultural sector in Stanthorpe Shire. Agriculture is a key part of the economy in Stanthorpe Shire, especially the production of stone fruits, summer vegetables and wine. The benefits to the agricultural sector include:

- more flexibility in farming operations;
- greater security for existing production and better water management of existing storages;
- a more sustainable economy, especially during extended periods of drought with less dependency on Federal Government "Exceptional Circumstances" funding;
- more reliable agricultural yields during summer production, (the area is recognised as the only production region of high value summer fruit and vegetable crops in Queensland); and
- greater equity for those who have no access to water on-stream.

2.4.2.2 Social Impacts and Benefits

The social benefits and impacts resulting from the Combined Urban and Irrigation project will be similar to the Urban water supply project.