WATER AND SEWERAGE CONTRIBUTION POLICY

Prepared for Dubbo City Council in November 2002
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EXECUTIVE SUMMARY

This Draft Water and Sewerage Contributions Policy (WSCP) details a review on behalf of Council by Hunter Water Australia (HWA) of Dubbo City Council's (DCC) *Combined Water and Sewerage Contributions Policy*, adopted February 1998. This draft forms part of the rolling review of planning instruments and policies administered by Council's Environmental Services Division.

The Contributions Policy enables Dubbo City Council to levy contributions where the anticipated development will or is likely to increase the demand for water and/or sewerage services. Projected population and development growth will place additional demands and loadings on the Council's water supply and sewerage systems respectively. Generally, additional capacity is required in the water supply and sewerage systems to accommodate increased demands and loadings. This normally requires system components, such as pumping stations and pipelines, to be upgraded. On occasions it is necessary to construct additional system components to service the growth.

Under this Policy a developer contribution is determined by analysing the cost of existing infrastructure, existing demand, anticipated growth and the cost of works required to meet the demands created by growth. The total cost of these works is divided between demand units to determine the capital cost per unit, or *unit contribution*. The Policy contains relevant information used to calculate the unit contribution (developer contribution per Equivalent Tenement) for new development in the relevant water and/or sewerage catchment.

The draft document incorporating the revised Development Contribution Policy will be placed on public exhibition for a 30-day period. This will provide an opportunity for examination by interested parties and for such parties to make submissions to Council on the draft Policy. Council will consider any submissions made and if considered relevant the draft WSCP will be amended. Following adoption by Council, the WSCP will then be forwarded to DLWC for registration. Any amendments to the document will follow the same process.

The Policy applies to all land within the urban areas of the City of Dubbo, which are serviced or are proposed to be serviced by reticulated water supply and sewerage services, including villages such as Wongarbon and Ballimore and the Industrial Candidate Areas. This Policy applies to all developments and land uses within the areas defined and which utilise or propose to utilise reticulated water supply and/or sewerage infrastructure. The areas covered by this Policy are shown on Plan 1 for water supply and Plan 2 for sewerage.

For the purposes of this Policy, Dubbo City Council has resolved to amalgamate service areas into single catchments for both water supply and sewerage. All water supply is distributed from the clear water pumps at the John Gilbert Water Treatment Plant (WTP) and hence can be considered a single water supply distribution system. Following the proposed decommissioning of the Bunglegumbie Sewerage Treatment Plant (STP), all sewage flows are now treated at the Troy Junction STP and hence can be considered a single sewerage catchment. Although Wongarbon will eventually have a 'stand alone' treatment plant instead of pumping sewage back to the Troy Treatment Plant, it is proposed to have a City-wide sewerage charging system.

As Dubbo City Council also services a number of villages located outside the main urban area of Dubbo, allowance has been made in the growth projections for the servicing of these villages with water supply and sewerage facilities.

The developer charge is the cost per *unit of capacity* within the relevant water and/or sewer infrastructure system. The measure for the standard *unit of capacity* is the capacity requirement relative to a single residential dwelling ie one residential dwelling equals one Equivalent Tenement (ET).

The developer contribution payable for the respective water and/or sewer system is thus:

Assessed Demand or Loading (ET) x Developer Contribution ($/ET)

The Developer Contribution is determined by analysing the cost of capital works, existing demand, anticipated growth and the cost of works required to meet the demand created by growth. The total cost of existing and proposed augmentation works required to service development is divided between demand units to determine the capital cost per unit. Any surplus income Council generates from development (ie operational income minus operational, maintenance and administration costs) is deducted from the capital cost to obtain the Developer Contribution.

In order to account for the time value of money, all calculations are undertaken using Net Present Value (NPV). NPV is a standard commercial procedure for calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present time, using the required return on investment.

The Developer Contribution is therefore calculated as:

- The Present Value (PV) of the cost over time of capital works required to service development (referred to as the 'capital contribution')

  less

- The Present Value of expected net income (revenue less expenses) over time from servicing development (referred to as the 'reduction amount').

The developer contributions have been calculated with a proposed capital works cut-off year of 2021 and real discount rates of 3%, 7% and 7% for pre 1996 assets, post 1996 assets and the reduction amount respectively. The developer contributions for the Dubbo water supply and sewerage systems are shown in Table 1. The total applicable contribution is calculated as the capital contribution minus the reduction amount.

Table 1 *Calculated Developer Contributions for Water Supply and Sewerage Systems*

	Water Supply ($/ET)	**Sewerage ($/ET)**
Capital Contribution	$4,774	$5,891
Reduction Amount	$1,404	$1,846
Total Applicable	**$3,370**	**$4,045**

The calculated developer contributions are the maximum value that may be imposed by Council. If Council elects to subsidise the calculated developer contributions, then the resulting cross-subsidy from existing customers must be calculated and disclosed both in this WSCP and also in Council's Strategic Business Plans for Water Supply and Sewerage.

The current developer contribution for water supply ($3,650/ET) is 108% of the calculated contribution ($3,370/ET). The current developer contribution for sewerage ($3,369/ET) is 83% of the calculated contribution ($4,045/ET). Adoption of the calculated contributions without subsidy is likely to impact on potential development activity. A subsidy such as that being proposed would reduce the contributions to $3,370/ET for water supply and $3,370/ET for sewerage.

It is Council's intention to continue to foster development in the Camp Road development zone and hence this area would require a higher subsidy. The current water supply and sewerage developer contributions for the Camp Road area are approximately 40% of the city-wide contributions. A continuation of this charging policy would result in a water supply contribution of $1,350/ET and a sewerage contribution of $1,350/ET. The total subsidy for the Camp Road development area is 60% for water supply and 67% for sewerage.

The recommended developer contributions and relevant subsidies are summarised in Table 2.

Table 2 *Summaries of Proposed Developer Contributions and Subsidies*

	Water Supply		**Sewerage**	
	City-Wide ($/ET)	**Camp Rd ($/ET)**	**City-Wide ($/ET)**	**Camp Rd ($/ET)**
Calculated Contribution	$3,370	$3,370	$4,045	$4,045
Proposed Contribution	$3,370	$1,350	$3,370	$1,350
Subsidy	0%	60%	16%	67%

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1. INTRODUCTION

This Draft Water and Sewerage Contributions Policy (WSCP) details a review undertaken on behalf of Council by Hunter Water Australia (HWA) of Dubbo City Council's (Council) *Combined Water and Sewerage Contributions Policy*, adopted February 1998. This draft is part of the rolling review of planning instruments and policies administered by Council's Environmental Services Division.

The Contributions Policy enables Council to levy contributions where the anticipated development will or is likely to increase the demand for water and/or sewerage services. Projected population and development growth will place additional demands and loadings on the Council's water supply and sewerage systems respectively. Generally, additional capacity is required in the water supply and sewerage systems to accommodate the increased demands and loadings as a consequence of new development. This normally requires system components, such as pumping stations and pipelines, to be upgraded. On occasions it is necessary to construct additional system components to service the growth.

The main purpose of this Policy is to:

- Identify the likely demand for capacity in water and sewer infrastructure as a result of new development and to provide for that capacity, and
- To identify the extension or augmentation of water supply and sewerage services that has been provided in anticipation of development through developer contributions.

Dubbo City Council maintains an asset register that includes details and timing of existing infrastructure. In addition, Council has prepared a schedule of capital works based on current projections of growth. In this WSCP a developer contribution is determined by analysing the cost of existing infrastructure, existing demand, anticipated growth and the cost of works required to meet the demands created by growth. The total cost of these works is divided between demand units to determine the capital cost per unit, or *unit contribution*. This Policy contains relevant information used to calculate the unit contribution (developer contribution per Equivalent Tenement) for new development in the relevant WSCP catchment.

2. BACKGROUND

2.1 General

The development or redevelopment of land for residential, commercial or industrial purposes creates a need for additional capacity in water supply and sewerage systems. Water and sewerage providers recover the cost of providing this additional capacity predominantly through developer contributions. Council initiated its current s64 Developer Contributions Policy in 1996 and adopted a combined s64 Contribution Policy for Water Supply and Sewerage in February 1998 [Ref 1].

This s64 Policy relates to section 64 of the Local Government Act - 1993. This section of the Act details the provisions relating to the construction of works for developments. It states that the provisions of operation for water authorities, detailed in Division 5 of Part 2 of Chapter 6 of the Water Management Act 2000, apply to councils exercising functions in the same way. Developers are required to pay a contribution, to the water supply authority, towards the cost of existing and projected water management works. The water supply authorities are also authorised, when calculating a developer contribution, to take into consideration the value of the existing water management works and the estimated cost of projected water management works.

Prior to the implementation of Development Contribution Polices for water supply and sewerage in local government areas of country NSW they are to be registered with the Department of Land and Water Conservation (DLWC). DLWC issued draft guidelines for the calculation of water supply and sewerage contributions in March 2000 [Ref 2]. These guidelines were based on a determination issued by the Independent Pricing and Regulatory Tribunal (IPaRT) in September 2000 [Ref 3].

IPaRT is an independent authority that regulates the pricing of declared government monopoly services. The Tribunal regulates urban water services under the Independent Pricing and Regulatory Tribunal Act 1992. Enquiries are undertaken under Section 11 of the Act for the following government agencies, which are Standing References under Schedule 1 of the Act:

- Sydney Water Corporation
- Hunter Water Corporation
- Gosford City Council
- Wyong Shire Council

This draft document incorporating the revised Development Contribution Policy will be placed on public exhibition for a 30-day period. This is to provide an opportunity for examination by interested parties and for such parties to make submission to Council on the draft Policy. Council will consider any submissions made and where necessary include relevant amendments to the Policy. The Policy will then be forwarded to DLWC for registration. Subsequent amendments to the document will be required to follow the same process.

2.2 Previous developer contributions

The current developer contributions adopted by Dubbo City Council in the 2002/2003 Budget are shown in Table 2.1. These developer contributions were based on water supply and sewerage contribution rates prepared by Scott Carver Pty Ltd in conjunction with Jon Hall and Associates [Ref 1], and have been indexed annually in line with CPI variations. The original contribution rates prepared by Scott Carver represented the upper limit of what could be justified in accordance with the IPaRT Guidelines that were relevant at that time. Council applied reduced contribution amounts in order to comply with Council's broader infrastructure and development planning objectives.

The contribution rates were calculated on the basis of a single, City-wide catchment. Council adopted lower contributions for the Camp Road area in order to promote development within this zone.

Table 2.1 Current Developer Contributions ($ per unit of capacity)

Sewer Supply Contribution		**Water Supply Contribution**	
City Precinct	**Camp Rd Precinct**	**City Precinct**	**Camp Rd Precinct**
$3,369	$1,350	$3,650	$1,350

3. ADMINISTRATION

3.1 Reference

This Policy is called the Dubbo Water and Sewerage Contribution Policy (WSCP). This Policy repeals the Combined Water and Sewerage Contributions Policy adopted by Council in February 1998.

3.2 What is the purpose of this Policy?

The primary purpose of this Policy is to enable the Council to require contributions towards the provision, extension or augmentation of water and sewerage services that will or are likely to be required as a consequence of development or that have been provided in anticipation of, or to facilitate, such development.

As a consequence of the implementation of this Policy:

- The cost of servicing future developments with reticulated water and sewerage infrastructure will be met by new developments through developer contributions and/or annual contributions. Existing ratepayers will not be financially disadvantaged by the application of the Policy.
- The process of collecting developer contribution will be fair, transparent and publicly accountable. The transparency will enable developers to understand and assess the calculated contributions in advance of making business decisions regarding proposed developments.
- The provision of water and sewerage infrastructure will occur in a timely and appropriate manner and in advance of future development.

3.3 Where does this Policy apply?

3.3.1 Urban areas

The Policy applies to all land within the urban areas of the City of Dubbo, which are serviced or are proposed to be serviced by reticulated water supply and sewerage services, including villages such as Wongarbon and Ballimore. This Policy applies to all developments and land uses within the areas defined and which utilise or propose to utilise water supply and sewerage infrastructure. The areas covered by this WSCP are shown in Plan 1 for water supply and Plan 2 for sewerage.

This Policy does not apply to:

- Development in locations outside the areas defined above or identified on Plans 1 or 2;
- Rural dwellings (not connected to water and/or sewerage services);
- Developments which include an approved sewerage treatment package plant and method of effluent disposal or alternative water supply service to the satisfaction of Council; or

- Developments that have a current development consent and which have either paid a contribution under a previous Contributions Policy or for which there is a valid development contributions agreement in place.

For the purposes of this Policy, Dubbo City Council has determined to consolidate service areas into single catchments for both water supply and sewerage. All water supply is distributed from the clear water pumps at the John Gilbert Water Treatment Plant (WTP) and hence can be considered a single water supply distribution system. Following the decommissioning of the Bunglegumbie Sewerage Treatment Plant (STP), all sewage flows are now to be treated at the Troy Junction STP and hence can be considered a single sewerage catchment. Although Wongarbon will eventually have a 'stand alone' treatment plant instead of pumping sewage back to Council's Troy Treatment Plant, it is proposed to have a City-wide sewerage charging system.

In the event that an application is received for an activity or use, or in a location for which there is no adopted contribution rate, Council may prepare an appropriate contribution rate.

In the event that Council agrees to the provision of water supply and sewerage services to a development outside of the area to which this Policy applies, Council may apply the adopted contribution rate or it may be necessary for Council to prepare a new policy for that development as a stand alone catchment. The cost of preparing such a policy shall be borne by the applicant.

3.3.2 Villages

Council also services a number of villages located outside the main urban area of Dubbo. Allowance has been made in the growth projections for the servicing of these villages with water supply and sewerage facilities.

Two of these villages, Brocklehurst and Wongarbon, are already serviced with a reticulated water supply, and these are included within the boundary shown on Plan 1. Council is currently extending the water supply system to service the villages of Ballimore and Eumungerie. Once Ballimore and Eumungerie are connected to the water supply system they also will be included in the WSCP catchment area. Council plans to ultimately provide sewerage facilities to these villages, at which time they also would be included.

Plans have been prepared for each of the villages showing the areas that are (or will be) included within the WSCP. These plans are as follows:

Plan 3: Ballimore Water Supply
Plan 4: Brocklehurst Water Supply
Plan 5: Brocklehurst Sewerage
Plan 6: Eumungerie Water Supply
Plan 7: Wongarbon Sewerage
Plan 8: Wongarbon Water Supply

3.3.3 Rural areas

Proposed trunk water mains linking Brocklehurst to Eumungerie and Wongarbon to Ballimore will pass through rural areas. Council will not allow connection to either trunk main. Increasing the standard of servicing in rural areas (such as the Dryland Agriculture zone) is not compliant

with Council's adopted Rural Areas Strategy and legal planning instrument Dubbo Local Environmental Plan 1997 - Rural Areas. Allowing rural water connections along newly constructed trunk mains may place unreasonable pressure on Council to permit subdivision of farm land for 'hobby' farm development, thus increasing the risk of unnecessary and indiscriminate fragmentation of rural land.

3.4 When are developer contributions applicable?

When a developer proposes to subdivide land, erect or extend a commercial/industrial building or multiple residential dwelling units, a Development Application is lodged with Council. If the new development is to be connected to Council's water and/or sewer mains, Council will investigate the impact of the proposed development on its systems. Where additional demand is placed on its systems as a result of the development connecting to the water supply and/or sewerage system, Council will issue a notice stating the required developer contribution.

3.5 How is the developer contribution applied?

The developer charge is the cost *per unit of capacity* within the relevant water and/or sewer infrastructure system. The measure for the standard *unit of capacity* is the capacity requirement relative to a single residential dwelling ie one residential dwelling equals one Equivalent Tenement (ET).

The developer contribution payable for the respective water and/or sewer system is thus:

Assessed Demand or Loading (ET) x Developer Contribution ($/ET)

In order to assess the developer contribution applicable to a specific development, it is necessary to assess the demand that the proposed development will place on the relevant water and/or sewer systems.

For the case of a development involving the creation of additional residential lots, this is a relatively simple process. The additional demand or loading created by the development is the number of additional lots. The process is illustrated in the following example:

Example 1

The developer contribution for a water supply system is determined to be $3,370/ET, and for sewer $3,370/ET. Council receives an application to connect a proposed subdivision which will create an additional 10 residential lots.

The developer contribution for water is:	**10 ET x $3,370/ET**	**=**	**$33,700.00**
The developer contribution for sewer is:	**10 ET x $3,370/ET**	**=**	**$33,700.00**
	Total developer contribution	**=**	**$67,400.00**

The process of assessing the demand or loading of a potential development can be more complex if the development contains non-residential elements. For this case it is necessary to estimate the number of standard residential dwellings required to generate an *equivalent demand* or loading to the proposed non-residential development.

In order to assist with the assessment of water and/or sewer demand, the *Water Supply Investigation Manual* (1986) [Ref 4], the *Demand Criteria for Design Purposes for NSW Country Towns* (1980) [Ref 5] and the *Manual of Practice: Sewer Design* (1984) [Ref 6] may be used. These documents were prepared by the Public Works Department and are widely used in the water industry to design water supply and sewerage systems.

Table 3.1 identifies the ETs for various types of development for the provision of water supply and for sewerage services. These rates have been adopted by Council for various types of development and are based on industry standard design figures provided by the Department of Public Works and Services.

Table 3.1 ETs for Various Development Types

Type of Land Use or Development	Sewerage Services ET	Water Supply ET
Residential		
Detached housing	1	1
Green Street housing	0.67	0.67
Semi-detached houses and duplexes	0.67	0.67
Flats, town houses containing more than three units	0.5	0.5
SEPP 5 development	0.5	0.5
Commercial		
Per 1,000m^2 floorspace or per shop, whichever is the greater	0.125 or 0.04	As per Table 3.2
Plus public toilets per WC or urinal	0.5	
Motel per unit	0.250	
Industrial		
(a) At subdivision stage assessed as one lot	1	1
(b) At development stage	As per Appendix E for the specific use minus 1	As per Table 3.2 for the specific use minus 1

The approach to be adopted for the calculation of Water Supply ETs is outlined in Table 3.2. This approach is based on the peak daily demand figures contained in the above manuals.

Table 3.2 Calculation of Water Supply ETs

Type of Land Use or Development	Peak Daily L/d/Unit
Houses (permanent occupancy) = 1 ET	5,000 (a, b)
Hotels/motels (per room/unit)	300 (c)
Caravan parks and camp sites (per site)	600
Schools (per pupil)	50 (d)
Hospitals (per bed)	1,000 (d)
Nursing homes (per bed)	300 (d)
Parks, ovals, etc (per ha)	62,500 (e)

a Potable (domestic) use = 1,000 1/d/unit
b Non-potable household use = 4,000 1/d/unit
c Plus equivalent of one (1) permanent occupancy house
d Plus allowance for lawn and garden watering
e Restricted to those areas in parks, ovals, schools etc actually watered.

Where water supply demands must be calculated based on the number of plumbing fittings within a development, the allowances detailed in Table 3.3 may be used. These allowances are conservatively low relative to peak daily demands and will therefore favour the developer rather than Council.

Table 3.3 Domestic Household Daily Water Allowances

Activity	PWD Normal Allowances L/cap
Shower/bath, washing hands etc	55
Food preparation, cooking and drinking	10
Household cleaning	5
Washing dishes etc	15
Flushing toilet	30
Laundry	35
Car washing	2
Leakage	10%
TOTAL	167

The following approach is to be adopted for the calculation of Sewerage Services ETs. This approach is based on the average dry weather flows per day (ADWF) contained in the *Manual of Practice: Sewer Design* [Ref 6]. The relevant sections of this manual are attached, refer Appendix E.

Household sewage rates are based on:

Average Dry Weather Flow (ADWF)
= 0.011 litres/sec/tenement
= 960 litres/day/tenement

The process of determining a developer contribution for a non residential development, using these approaches, is illustrated in the following example:

Example 2

The developer contribution for a water supply system is determined to be $3,370/ET, and for sewer $3,370/ET. Council receives an application to connect a proposed 100 bed motel to the water and sewer systems.

The expected peak daily water demand for the proposed motel is 15 kL plus 5 kL (150 L/day/bed plus the equivalent of one permanent occupancy house). The peak daily water demand for a house (permanent occupancy) is 5 kL. Hence the assessed water demand for the motel is 20/5 = 4 ET.

The assessed sewer loading for the motel is 100 beds x 0.125 = 12.5 ET.

The developer contribution for water is:	**4 ET x $3,370/ET**	**=**	**$13,480.00**
The developer contribution for sewer is:	**12.5 ET x $3,370/ET**	**=**	**$42,125.00**
	Total developer contribution	**=**	**$55,605.00**

3.5.1 Development not categorised by PWD Guidelines

Council recognises that these PWD documents were not prepared for this purpose and cannot practically be applied to all development applications. Some developments will not 'fit' a category in the Guidelines. Additionally, data required to assess the demands/loadings will not always be available at the time of application, such as the expected annual water consumption.

For this reason Council accepts that a small proportion of applications will be assessed on individual merit. Council will determine a demand/loading for the development using the best available data. Council's Director of Technical Services (DTS) retains the discretion to assess an application on its merits and in situations requiring conflict resolution, to determine the appropriate course of action.

Alternative sources to assist the determination include:

- Plumbing fixtures code; and
- Listings of water consumptions of typical developments prepared by other water authorities.

In the case of some industrial and commercial development where the developer does not accept the determination of the DTS, the developer will have the option of paying the development contribution in full and having it assessed after a period of 12 months in the light of actual water usage and sewage flows. The developer is fully responsible for arranging and bearing the cost of recording the water and sewage flows, interpreting the results and preparing a submission to Council. If the submission indicated the determination was not correct and the DTS accepts the submission, then the contribution would be adjusted, either by Council refunding part of the contribution or the developer increasing their payment.

It is proposed that Council will instigate a forum to mediate in the assessment of the 'special case' applications. This forum would receive input from both the Technical Services and Environmental Services Divisions of Council. However, the final decision rests with the Director Technical Services.

If a developer disagrees with the assessment the onus would be on the developer to demonstrate that there is an improved assessment.

The ET rating assigned to a development can be different for water and sewer. The water ET rating can be considered a function of the amount of water consumed by the development.

For sewer however, a number of variables impact on the ET rating. For example the proportion of water consumed that is discharged to sewer can vary considerably depending on the type of development. Also it is acceptable practice when sizing sewer infrastructure to allow for inflow of stormwater. The allowance for storm inflow is a function of the area of the contributing catchment and the type of land use.

3.6 When are contributions payable?

The contribution for the various types of consents and approvals and assessed in accordance with this Policy is payable in accordance with the following table.

Table 3.4 Payment of Contributions

Type of Application	When is Contribution Payable?
In the case of a consent for *subdivision:*	Before the subdivision linen plan(s) (Subdivision Certificate) is released by the Council to the applicant.
In the case of a consent for *development not involving subdivision but where a subsequent building Construction Certificate is required:*	(a) Where an Occupation Certificate must be obtained for the building - prior to its issue; and (b) Where an Occupation Certificate is not required - prior to occupation of the building
In the case of a consent for *development involving both a subdivision and building works requiring a subsequent building Construction Certificate:*	(a) Before the subdivision linen plan(s) (Subdivision Certificate) is released by the Council to the applicant; or (b) Where an Occupation Certificate must be obtained for the building - prior to its

	issue; or (c) Where an Occupation Certificate is not required - prior to occupation of the buildings, Whichever occurs first.
In the case of a consent for *any other development:*	Prior to occupation/use of the development.

3.6.1 Deferred or periodic payments

The Council may accept the deferment of the payment of a contribution in respect of subdivisions subject to the following conditions:

- Lodgement of an unconditional bank guarantee to cover the amounts of such contributions;
- All money due as part of such contributions being payable within twelve (12) months from the date of uplifting of the Plan of Subdivision;
- The proposal applies to subdivision releases of five (5) lots or more or other developments with an equivalent value of five (5) lots or more; and
- The decision to accept a deferred payment is at the sole discretion of the General Manager or his delegate.

3.7 Monitoring and review/update of developer contributions

The developer contribution calculated in this plan is based on current projections of growth in population and development and Council's assessment of infrastructure that will be required to service this growth. It is important that trends are monitored to ensure that contributions received are spent in a manner that provides services in an efficient and effective way.

Council's commitment to future works will be dependent on development and any change in the current projections may necessitate the rescheduling of future works. This plan therefore will require periodic review, say every 5 to 6 years, to ensure the developer contributions remain valid. Any review of the plan would include a public exhibition period of 30 days.

In the period between any review, the developer contribution will be adjusted annually (1 July each year) on the basis in the change in the Consumer Price Index (CPI) in the preceding 12 months to December, excluding the impact of GST. Reference in this Policy to CPI is to the Index supplied by the ABS for 'Public Enterprises State and Local - Water Supply and Sewerage'.

4. SYSTEMS BACKGROUND AND TIMING OF FUTURE WORKS

4.1 Water supply source, treatment and distribution system

Dubbo City Council operates a potable water supply scheme for the City of Dubbo, which currently serves an urban population of approximately 37,600 persons. A raw water pump station draws water through an inlet structure from the Macquarie River and delivers it to the John Gilbert Water Treatment Plant (WTP). Raw water for the treatment plant is also sourced from the South Dubbo Bore field. DLWC has requested that Council reduce bore output from the south-east bore field by 50% to protect the long-term viability of the bore field. However, due to poor river quality this objective is difficult to achieve. After treatment the potable water is pumped to several service reservoirs within the water supply system.

Several villages surrounding Dubbo have either been recently connected or are proposed to be connected to the water supply system. The Wongarbon area was connected to the Dubbo water supply system in 2000 under the Wongarbon Water Supply Scheme. The Brocklehurst area was also connected to the water supply under a similar scheme also undertaken in 2000. A feasibility study of providing water supply services to the Ballimore area completed by Council recommended that the area could be serviced. A cost assessment of providing water supply services to the Eumungerie area is to also be carried out.

There are five clear water pumps at the WTP. Since the upgrade in 1996, two of them discharge to West Dubbo supplying Bourke Hill Reservoir and Rifle Range Reservoir, while three clear water pumps supply the five Newtown Reservoirs. Water is reticulated from the Newtown Reservoirs to Elston Park and Erskine Street booster stations, which pump water to the Myall Street Reservoirs.

The Myall Street pumping station, adjacent to the Reservoirs, discharges water into the eastern Buninyong and Eulomogo Reservoirs that reticulate water to East Dubbo. The North Dubbo reticulation area is serviced from either or both of the Myall Street Reservoirs and the Erskine Street booster station. An area of high elevation around the Newtown Reservoirs is serviced from a 24-metre standpipe reservoir filled with water from the adjacent Newtown Reservoirs, after being pumped from a booster station. The new Yarrandale Pumping Station pumps water from the Myall Street Reservoirs to the 3.8 Megalitre Yarrandale Reservoir, which was constructed in 1996. This reservoir currently services the Yarrandale Road and Boothenba Road industrial estates.

Currently the John Gilbert WTP, constructed in 1980, is working at full available capacity. Commencing in 2002/2003 a new process train, capable of treating 30 ML/d, will be constructed on land adjoining the present John Gilbert WTP. The upgrade of the WTP is to provide for future growth.

The timing and costing of existing and proposed capital works, relative to the water supply system, are shown in the developer contribution model asset schedules, located in Appendix C.

4.2 Sewage transportation and treatment system

Dubbo City Council operates and maintains a sewage transportation and treatment system that currently serves approximately 34,600 persons. All sewage flows collected in the area serviced by the Dubbo sewerage system are currently transported to either the Bunglegumbie or Troy Junction Sewerage Treatment Plants (STP).

The Bunglegumbie STP is a trickling filter type plant constructed in the 1930s and is expected to cease operation in 2002/2003 as part of Council's previously adopted sewerage strategy. Following the decommissioning of the Bunglegumbie STP, all flows from within the Dubbo sewerage system will be directed to the Troy Junction STP.

Several areas surrounding Dubbo have previously had no sewerage services. Council has conducted studies to assess the feasibility of providing sewerage services to the Wongarbon and Brocklehurst areas. Construction has been tentatively scheduled for the Wongarbon system for 2004/2005. The Brocklehurst system construction is scheduled for 2004/2005. Council has plans to provide sewerage services to the Ballimore and Eumungerie areas but implantation will depend on the results from individual cost assessments to be conducted in the future.

Sewage in Dubbo, east of the Macquarie River, is collected by gravity at the Erskine Street, Troy Gully, Macquarie Street and Avian Estate Pump Stations. The Avian Estate Pump Station pumps to Troy Gully Pump Station. The Macquarie Street Pump Station pumps to Erskine Street Pump Station. In 1998 a small pump station was installed at the intersection of Margaret Crescent and Emerald Street to relieve a chronic overload situation in that vicinity. It will only operate in peak wet weather events.

Erskine Street Pump Station pumps part of its sewage direct to Bunglegumbie STP and part to Troy Gully Pump Station via a rising main discharging into a gravity pipeline upstream of the pump station. The proportion is set so that the Bunglegumbie Plant is not overloaded.

The Keswick Pump Station, at Hennessy Road in southeast Dubbo was completed in 1998. It is not yet operating but is awaiting commencement of subdivision development in the catchment it serves. Troy Gully Pump Station receives some sewage under gravity from East Dubbo and some pumped from Erskine Street Pump Station. All sewage at Troy Gully Pump Station is pumped to the Troy Junction STP.

After the construction of the Troy Junction STP in 1986 the combined treatment capacity for the Dubbo sewerage transportation system was 36,000 EP (Equivalent Persons). The initial stage of the Troy Junction STP augmentation, expected to be completed in 2003, will increase its capacity to 41,000 EP. This will be followed by the second stage of the augmentation, proposed for 2006/2007, which will provide a capacity of 50,000 EP.

The timing and costing of existing and proposed capital works, relative to the sewerage system, are shown in the developer contribution model asset schedules, located in Appendix D.

5. METHODOLOGY

5.1 General

The Developer Contribution is determined by analysing the cost of existing augmentation works, existing demand, anticipated growth and the cost of works required to meet the demand created by growth. The total cost of existing and proposed augmentation works required to service development is divided between demand units to determine the capital cost per unit. Any surplus income Council generates from a development (ie operational income minus operational, maintenance and administration costs) is deducted from the capital cost to obtain the Developer Contribution.

5.2 Net Present Value process

In order to account for the time value of money, all calculations are undertaken using Net Present Value (NPV). NPV is a standard commercial procedure for calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present time, using the required return on investment.

The Developer Contribution is therefore calculated as:

- The present value (PV) of the cost over time of capital works required to service

  less

- The present value of expected net income (revenue less expenses) over time from servicing development (referred to as the "reduction amount").

5.3 Determination of demands/loadings

5.3.1 General

An Equivalent Tenement (ET) is the basic unit of measure used to quantify the demand or loading on water supply or sewerage systems respectively. As previously stated, one ET represents the equivalent demand or loading from a standard residential household.

An Equivalent Person (EP) is another basic unit of measure generally used to quantify loadings on a sewerage treatment works. One EP represents the equivalent loading from a standard person.

EP loadings can be converted to an ET loading by defining an EP/ET ratio referred to as the *occupancy ratio*. For this study the average household density in the Dubbo City Council local government area is adopted as this ratio.

A growth profile from 1970 to 2021 has been adopted for the Developer Contribution calculation. Assets commissioned prior to 1970 are not included. Future projections are limited

to 20 years as Council has considerable confidence in the growth projections over this period of time.

5.3.2 Future demands/loadings

Future ET loading and demand calculations were provided by Council and are shown in Appendix B. Population projections were based on the 1996 recorded population and assumed future growth rates for the urban area of Dubbo and Wongarbon of 1.47% and 0.8% respectively. An occupancy ratio of 3.0 was assumed for 1996 with a decrease of 0.02 for every five years after. This assumed decrease in occupancy ratio of 0.02 every five years was determined to reflect predicted demographic changes in Dubbo.

It is assumed that the total population of the Dubbo Urban and Wongarbon areas was connected to the water supply system in 1996. Future demands are estimated by projecting the total population from this time.

Table 5.1 Projected Demands on Water Supply System

Year	1996	2001	2006	2011	2016	2021
Population (EP)	34,982	37,616	40,450	43,496	46,774	49,505
Occupancy Rate	3.00	2.98	2.96	2.94	2.92	2.90
Demand (ET)	11,661	12,623	13,666	14,795	16,018	17,071

It is assumed that only 93% of the urban population was sewered in 1996. The Wongarbon area is expected to be sewered in 2006. Projected loadings on the sewerage system are summarised in Table 5.2.

Table 5.2 Projected Loadings on Sewerage System

Year	1996	2001	2006	2011	2016	2021
Population (EP)	32,180	34,616	37,647	40,482	43,531	46,072
Occupancy Rate	3.00	2.98	2.96	2.94	2.92	2.90
Loading (ET)	10,727	11,616	12,719	13,769	14,908	15,887

5.3.3 Historical demands/loadings

Historical ETs were estimated using the following regression formula:

$$ET_{present-5} = \left[ET_{present} * \left[\left(1 - \frac{GR}{100} \right)^5 \right] \right] * \Delta Occupancy$$

NOTE: GR is the population growth rate between present -5 and present. It has been calculated from historical population figures supplied by Council.

Historical occupancy rates were assumed to follow the same trend as the projected occupancy rates supplied by Council. Historical demands/loadings on the water supply and sewerage systems are summarised in Tables 5.3 and 5.4.

Table 5.3 Historical Demands on Water Supply System

Year	1969	1971	1976	1981	1986	1991	1996
Population (EP)	12,613	13,606	16,443	20,619	22,446	25,908	34,982
Occupancy Rate	3.11	3.10	3.08	3.06	3.04	3.02	3.00
Demand (ET)	3,873	4,204	5,152	6,573	7,213	8,416	11,661

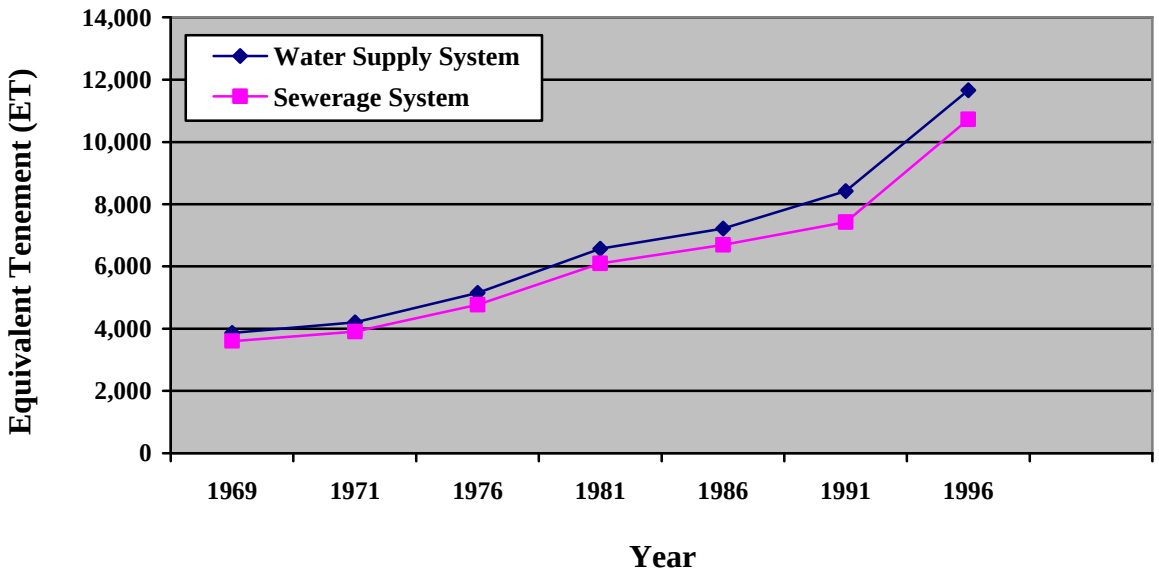
Table 5.4 Historical Loadings on Sewerage Supply System

Year	1969	1971	1976	1981	1986	1991	1996
Population (EP)	11,766	12,681	15,290	19,173	20,872	22,975	32,180
Occupancy Rate	3.11	3.10	3.08	3.06	3.04	3.02	3.00
Loading (ET)	3,604	3,908	4,777	6,094	6,688	7,425	10,727

The calculation of historical ETs for the water supply and sewerage systems can be found in Appendices C and D respectively.

Figure 5.1 is a graphical representation of the historical ETs estimated for the water supply and sewerage systems.

Figure 5.1 Historical ETs for the Water Supply and Sewerage Systems



5.4 Discount rates

A discount rate calculates the present value of money arising in the future. The discount rate therefore converts the value of future money to today's money.

The discount rate used in the Developer Contribution calculation should reflect the opportunity cost to Council of funding infrastructure works. It should recognise that in providing infrastructure prior to development, Council faces a number of uncertainties or risks. These uncertainties include growth rates, cost of capital works and changes in interest rates.

IPaRT has specified the discount rates to be used by Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council. The specified discount rates vary depending on whether the assets were commissioned prior to or following 1996. Similar values are recommended by DLWC for regional councils.

For Dubbo City Council a pre-1996 asset real discount rate of 3% and a post-1996 asset real discount rate of 7% have been adopted.

The commonly suggested values chosen for the real discount rate for the reduction amount vary between 7 and 12 percent. The value prescribed for the four major water authorities is 7% and this has also been adopted for Dubbo City Council.

5.5 Assets

5.5.1 Definition of assets

IPaRT defines assets on the basis of whether they were commissioned before or after the initial application of the NPV methodology for calculating developer contributions, ie 1996.

This ensures a consistent rate of return is applied to all assets in subsequent reviews of a WSCP.

5.5.2 Inclusion of pre-1996 capital works

Assets constructed prior to 1970 have been excluded from the developer contribution calculation as it assumed the cost of these assets has been fully recovered. This practice is consistent with guidelines issued by both IPaRT and DLWC.

5.5.3 Inclusion of post-1996 capital works

Council has prepared a future Capital Works Schedule that includes works proposed to be constructed until 2021. Sufficient confidence of the timing of construction and costing of these works governs their inclusion in the developer contribution calculation. An exception is the exclusion of the land sale credit expected from the sale of the former Bunglegumbie STP site, as there is not sufficient confidence in the timing or value of the sale.

5.6 Pro-Rata of asset costs

5.6.1 Pre-1996 assets

The estimated present day value of assets was pro-rated with respect to the amount of capacity provided by the asset for development. Council has carried out estimates of the percentage of each asset's capacity attributable to growth. The HWA developer contribution model recognises assets that service growth as 'Upgrade'. Hence, for 'Upgrade' assets the present day value of each asset (MEERA value), also provided by Council, was multiplied by the corresponding percentage attributable to growth.

5.6.2 Post-1996 assets

Council supplied details to the consultant of the works commissioned since 1996 and proposed works. All these assets are augmentations. The HWA developer contribution model recognises these assets as 'Augment'. This means that the entire cost of the asset is fully recoverable.

5.7 Calculation of capital contribution

The capital contribution is calculated in a spreadsheet model comprising a number of separate, but linked, worksheets.

The initial pro-rata of asset costs occurs in the Above Ground, Below Ground and Future Works asset worksheets, where the assets constructed in each year, and their costs, are tabulated prior to being referred to the 'Asset Schedule' spreadsheet. This spreadsheet separates the total asset costs for each year into pre-1996 assets and post-1996 assets. The separate total costs are then referred to in the 'Capital Contribution' spreadsheet. The following formula is then applied to the pre 1996-assets and post-1996 assets to calculate the net present value contribution:

NPV (Contribution) = NPV (Σ ASSET COSTS)/NPV (Σ INCREMENTAL ETs)

The calculations can be found in the developer contribution models located in Appendix C and Appendix D.

5.8 Reduction amount

The reduction amount (cost) is determined as the difference between the operating revenue arising from a WSCP area and the operating, maintenance and administration costs for that area. Council has projected net revenues and costs until 2020 and hence a forecast horizon of 20 years was adopted to calculate the operating surplus. The calculations can be found in the developer contribution models located in Appendix C and Appendix D.

6. Developer contributions

The developer contribution calculations are detailed in Appendix C (water supply) and Appendix D (sewerage).

6.1 Calculated contributions

The developer contributions have been calculated with a proposed capital works cut-off year of 2021 and real discount rates of 3%, 7% and 7% for pre 1996 assets, post 1996 assets and the reduction amount respectively. The developer contributions for the Dubbo water supply and sewerage systems are shown in Table 6.1. The total applicable contribution is calculated as the capital contribution minus the reduction amount.

Table 6.1 Calculated Developer Contributions for Water Supply and Sewerage Systems

	Water Supply ($/ET)	**Sewerage ($/ET)**
Capital Contribution	$4,774	$5,891
Reduction Amount	$1,404	$1,846
Total Applicable	$3,370	$4,045

The calculated developer contributions are the maximum value that may be imposed by Council. If Council elects to subsidise the calculated developer contributions, then the resulting cross-subsidy from existing customers must be calculated and disclosed both in this WSCP and also in Council's Strategic Business Plans for Water Supply [Ref 7] and Sewerage [Ref 8].

The current developer contribution for water supply ($3,560/ET) is 108% of the calculated contribution ($3,370/ET). The current developer contribution for sewerage ($3,369/ET) is 83% of the calculated contribution ($4,045/ET). Adoption of the calculated contributions without subsidy is likely to impact on potential developments. A subsidy such as that being proposed would reduce the contributions to $3,370/ET for water supply and $3,370/ET for sewerage. The resulting cross-subsidies are identified in Table 6.2.

It is Council's intention to continue to foster development in the Camp Road development zone and hence this area would require a higher subsidy. The current water supply and sewerage developer contributions for the Camp Road area are approximately 40% of the city-wide contributions. A continuation of this charging policy would result in a water supply contribution of $1,350/ET and a sewerage contribution of $1,350/ET. The total subsidy for the Camp Road development area is 60% for water supply and 67% for sewerage.

The proposed developer contributions and relevant subsidies are summarised in Table 6.2.

Table 6.2 Summary of Proposed Developer Contributions and Subsidies

	Water Supply		Sewerage	
	City-Wide ($/ET)	**Camp Rd ($/ET)**	**City-Wide ($/ET)**	**Camp Rd ($/ET)**
Calculated Contribution	$3,370	$3,370	$4,045	$4,045
Proposed Contribution	$3,370	$1,350	$3,370	$1,350
Subsidy	0%	60%	16%	67%

6.2 Sensitivity analysis

The calculated developer contributions are based on Council's current growth projections and adopted capital works program. The capital works program is a listing or future assets which have been identified as being necessary to service growth. If growth occurred more quickly or slowly than projected, the future capital works requirements would also change, and this in turn would impact on the developer contribution.

To assess the sensitivity of the developer contribution to varying growth rates, developer contributions for water supply and sewerage have been calculated for a more conservative growth rate. The capital works program has been amended to reflect the fact that fewer future assets are required to service the lower growth. The results are summarised in Table 6.3

Table 6.3 Sensitivity of Developer Contributions to Lower Growth

	Water Supply ($/ET)	**Sewerage ($/ET)**
Calculated Contribution	$3,370	$4,045
Low Growth Scenario	$4,618	$5,555

The results indicate that a lower growth projection would result in higher developer contributions.

6.3 Comparison with current developer contributions

The previous review of developer contributions occurred in February 1998 [Ref 1]. This review determined contribution rates for the funding of identified public facilities and was calculated on the basis of a single, city-wide catchment. The calculated contributions are summarised in Table 6.4.

Table 6.4 Previous Calculated Developer Contributions

Landuse	**Water Supply Contribution ($/ET)**	**Sewerage Contribution ($/ET)**
Detached Dwellings	$5,022	$5,428
Multi Unit Dwellings	$5,023	$5,434
Flats	$5,029	$5,443
Industrial	$5,027	$5,429
Commercial	$5,015	$5,429

The current contribution rates, which have been increased in line with the CPI, are summarised in Table 6.5.

Table 6.5 Current Developer Contributions

Water Supply Contribution		**Sewerage Contribution**	
City Precinct ($/ET)	**Camp Rd ($/ET)**	**City Precinct ($/ET)**	**Camp Rd ($/ET)**
$3,650	$1,350	$3,369	$1,350

The developer contributions calculated as part of this review (refer Table 6.1) are approximately 25% lower than those previously calculated (refer Table 6.4).

The change in the magnitude of the developer contribution for the water supply and sewerage systems may be attributed to:

- A review of capital works required to service future development.
- The application of a discount rate to be recouped through developer contributions. The previous assessment applied a discount rate of 7% to all assets. This would increase the rate of return and hence the calculated developer contribution when compared with the current assessment which discounted pre 1996 assets by 3%.
- The division of the capital contribution by the discounted ET take-up rate over the period 1970-2021. The previous assessment did not discount the ET take-up rate and hence the capital contribution was divided by a higher unit of capacity.
- The previous assessment calculated lower reduction amounts.

7. RECOMMENDATIONS

The recommended developer contributions are detailed in Table 7.1.

Table 7.1 Recommended Developer Contributions

	Water Supply		**Sewerage**	
	City-Wide ($/ET)	**Camp Rd ($/ET)**	**City-Wide ($/ET)**	**Camp Rd ($/ET)**
Calculated Contribution	$3,370	$3,370	$4,045	$4,045
Recommended Contribution	**$3,370**	**$1,350**	**$3,370**	**$1,350**
Subsidy	0%	60%	16%	67%

8. REFERENCES

[1] Scott Carver Pty Ltd (February 1998), *Combined Water and Sewerage Contribution Policy*, Dubbo City Council

[2] Department of Land and Water Conservation (May 2000), *Developer Contributions for Water Supply, Sewerage and Stormwater, Guidelines*

[3] Independent Pricing and Regulatory Tribunal of New South Wales (September 2000), *Developer Contributions, Determination No 9, 2000*

[4] New South Wales Public Works Department (September 1996), *Water Supply Investigations Manual*

[5] New South Wales Public Works Department (November 1980), *Demand Criteria for Design Purposes for NSW Country Towns*

[6] New South Wales Public Works Department (January 1987), *Manual of Practice, Sewer Design*

[7] Strategic Business Plan for Water Supply Services, DCC

[8] Strategic Business Plan for Sewerage Services, DCC

9. GLOSSARY OF TERMS

In this Policy, unless the context or subject matter otherwise indicates or requires:

'Area' means the land within the jurisdiction of the Council of the City of Dubbo

'Consent Authority' means the Council of the City of Dubbo

'Contribution' means a monetary contribution or land dedication as referred to in section 64 of the Local Government Act 1993

'Contributions Policy' means a Contributions Policy referred to in section 64 of the Local Government Act 1993

'Council' refers to Dubbo City Council

'*DCC'* means Dubbo City Council

'Development' may include a reference to the erection of a building on land; the carrying out of a work in, on, over or under land; the use of land or of a building or work on that land and/or the subdivision of land

'DLWC' means the Department of Land and Water Conservation

'*EPAA'* means the Environmental Planning and Assessment Act 1979

'*EP'* means the equivalent persons and is the unit of measure to describe the flow or demand associated with an average person

'*ET*' means the equivalent tenement and is the basic unit of measure used to describe flow or demand from contributing sources as a ratio to that expected from a single average residence. Other uses can be assessed as equivalent to a number of tenements

'Headworks' means those components that form the key infrastructure requirements for the supply of sewerage or water supply services to an area. Typically, headworks comprise such components as dams, bores, pumping stations, treatment plants, purification plants and trunk mains

'GR' means Growth Rate (% per annum)

'*HWA'* means Hunter Water Australia

'*Indexation'* means the percentage by which contributions are increased for each calculation period

'*IPaRT'* means the Independent Pricing and Regulatory Tribunal

'*LG Act'* means the Local Government Act 1993

'*ML/d'* means Megalitres per day

'*NPV*' means Net Present Value; a process to convert future incomes or expenditures to the value of today's money

'*Occupancy Rate'* means the average number of people per household; commonly referred to as the EP/ET ratio

'*Rising Main'* means a pipeline pumped under high pressure to which water connections are prohibited

'*STP'* means Sewerage Treatment Plant

'*WSCP'* means Water and Sewerage Contribution Policy

'*WTP'* means Water Treatment Plant

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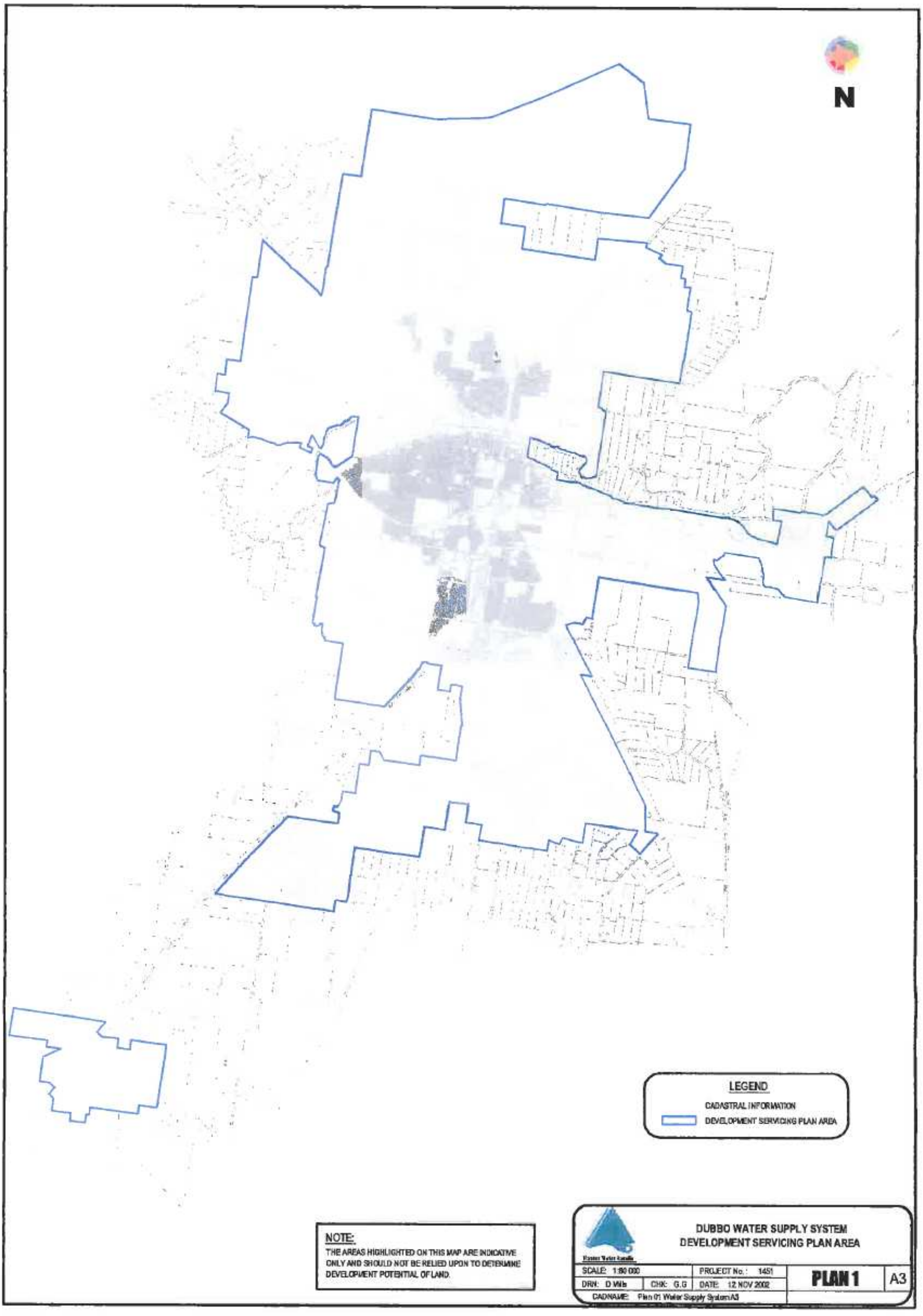
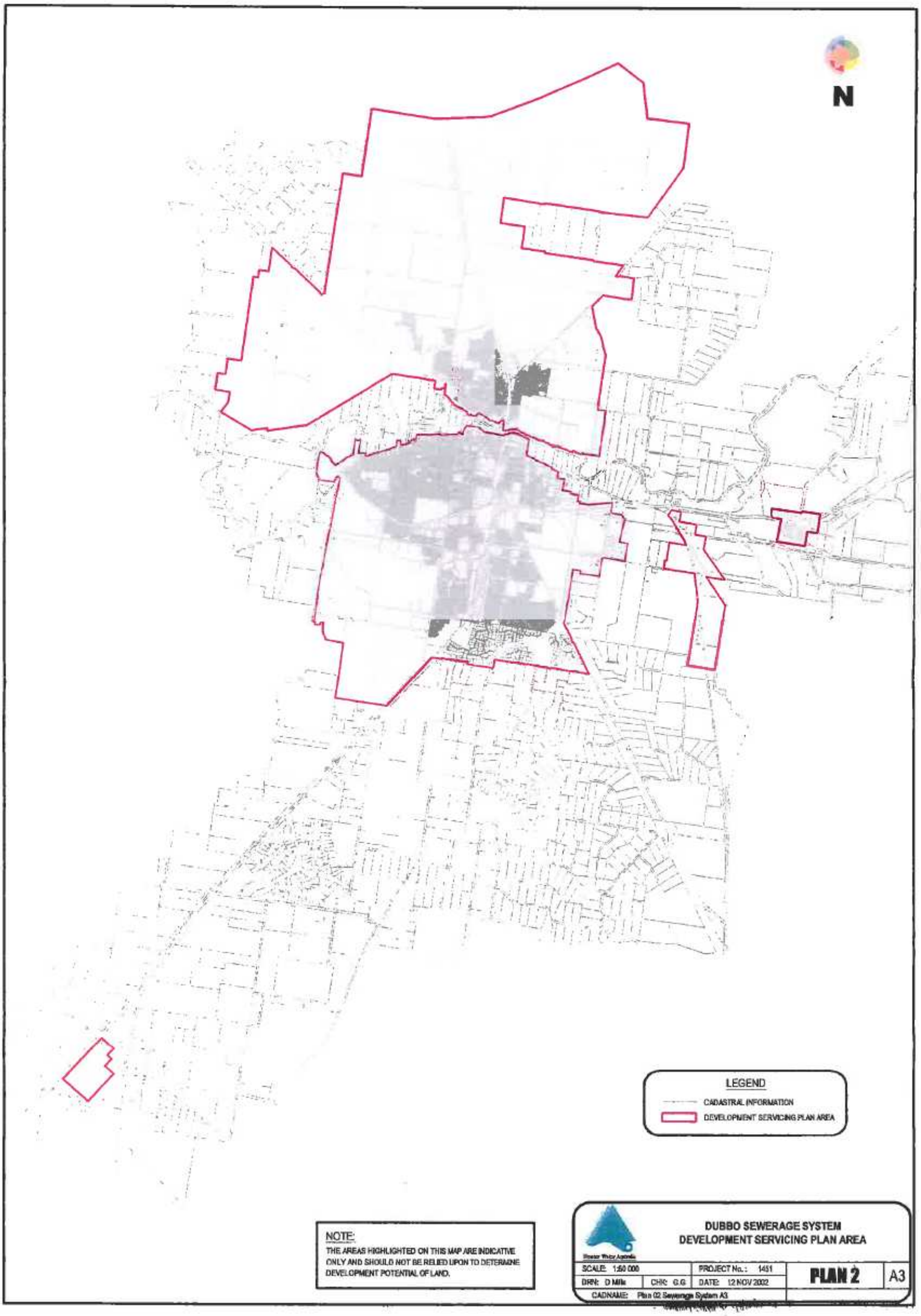
Appendix A

Plans

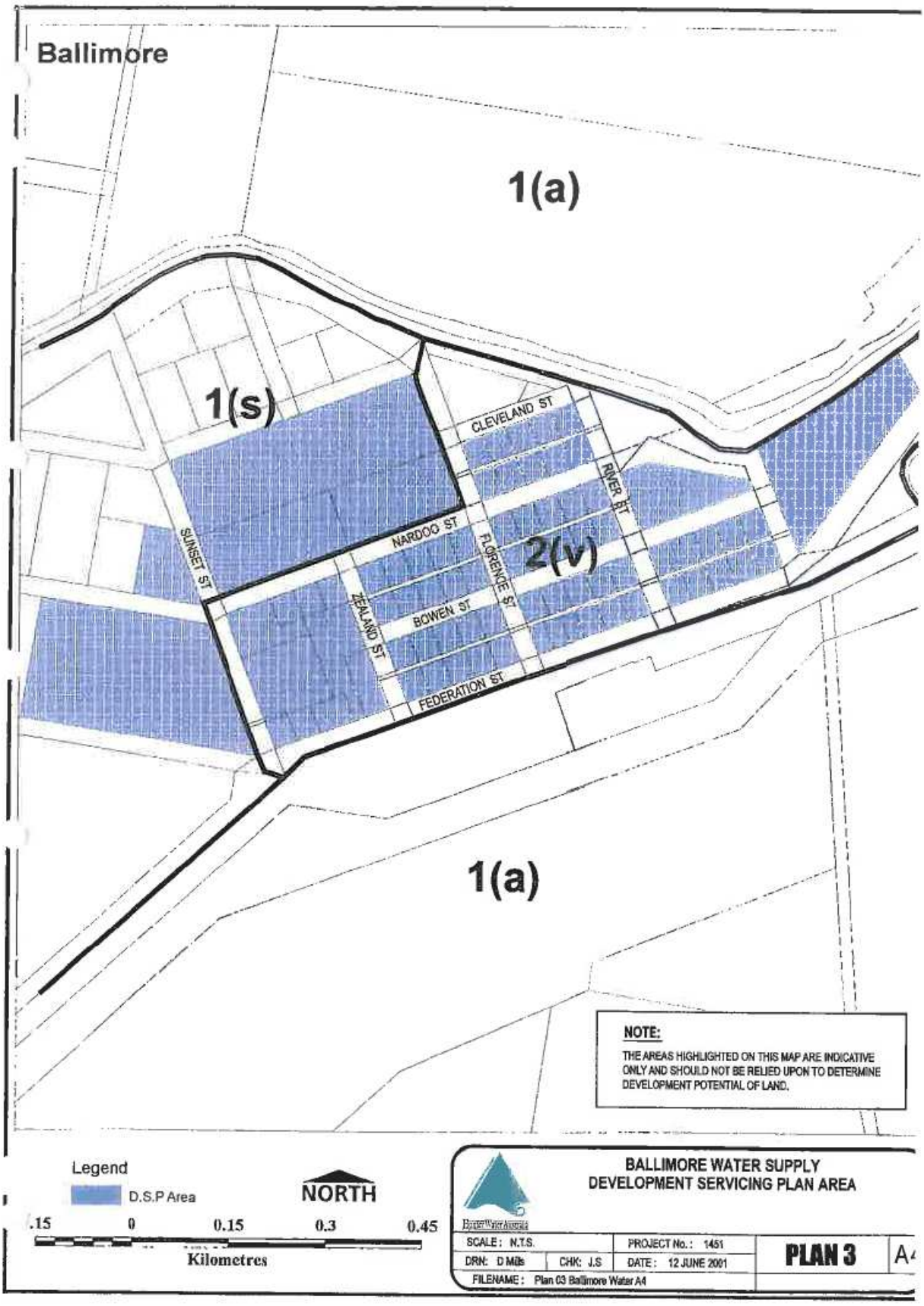
Plan 1 Dubbo Water Supply System



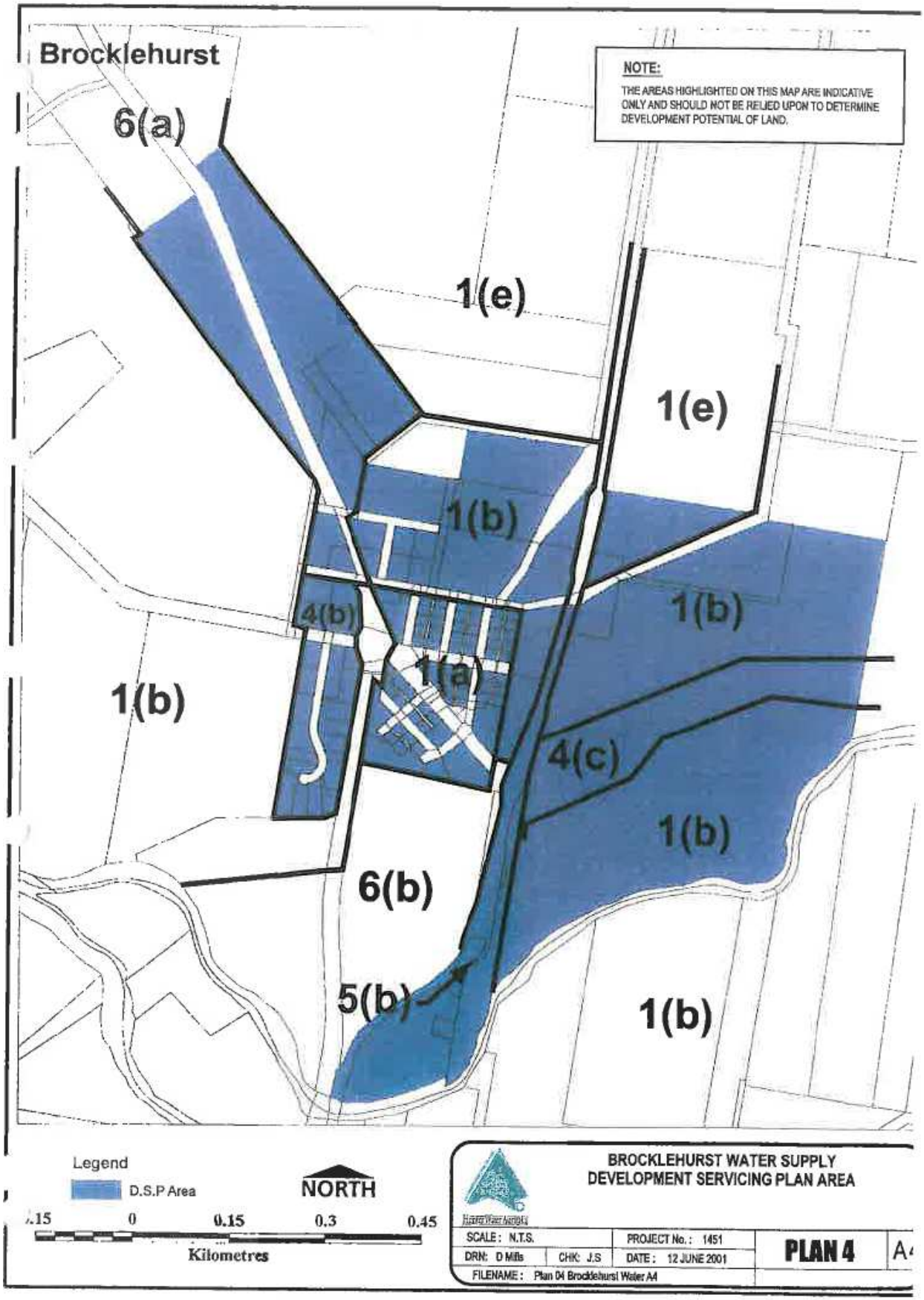
Plan 2 Dubbo Sewerage System



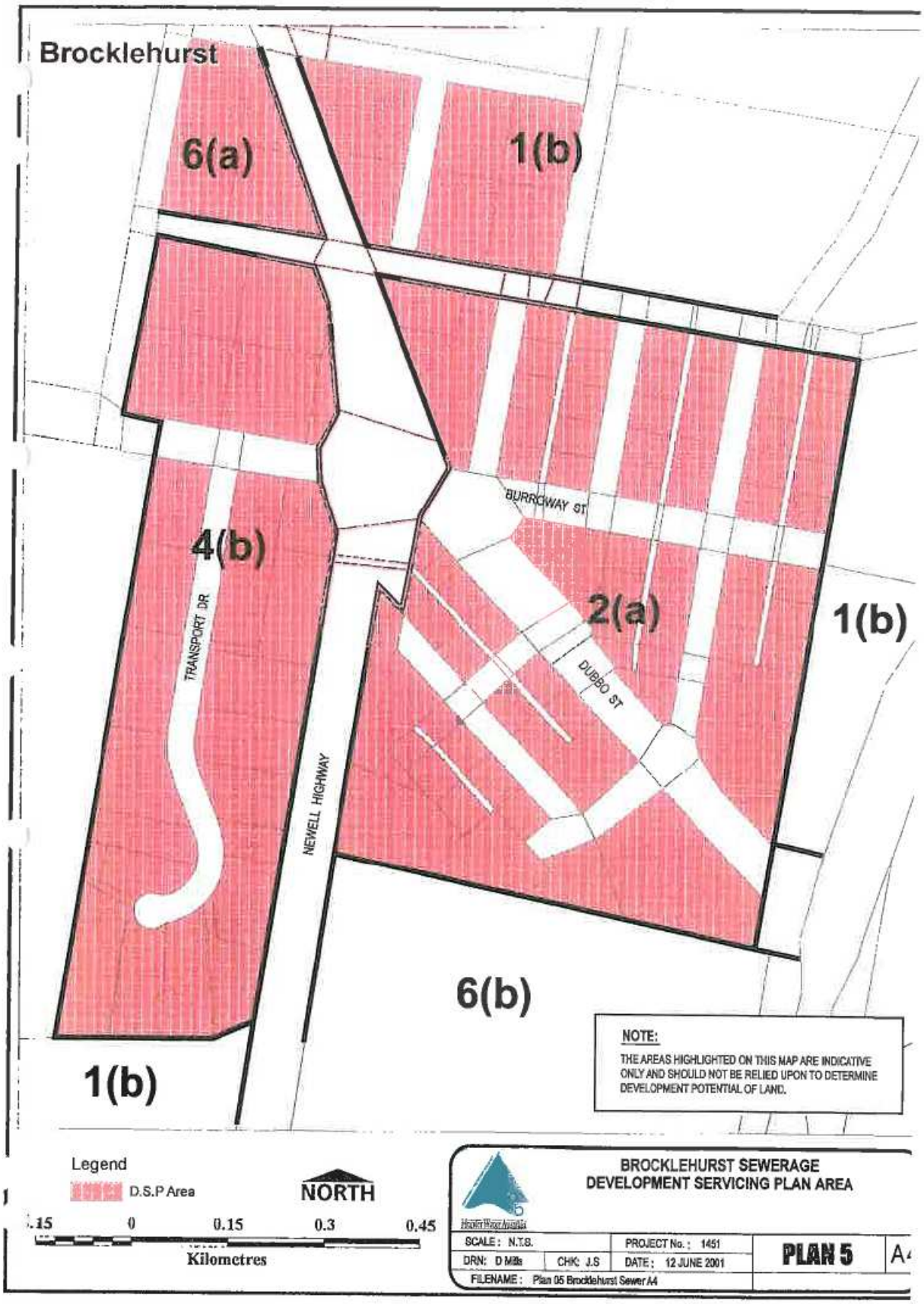
Plan 3 Ballimore Water Supply



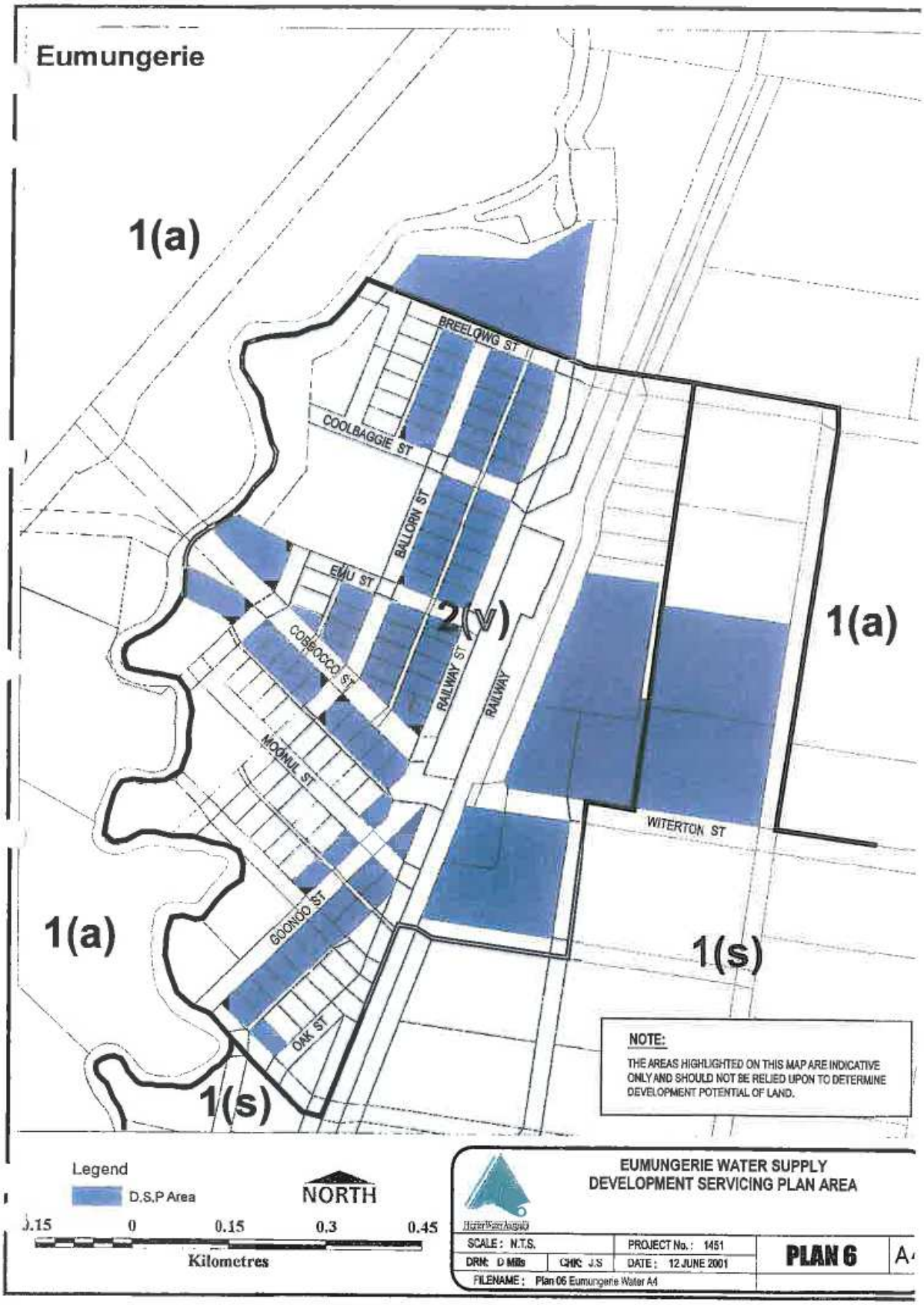
Plan 4 Brocklehurst Water Supply



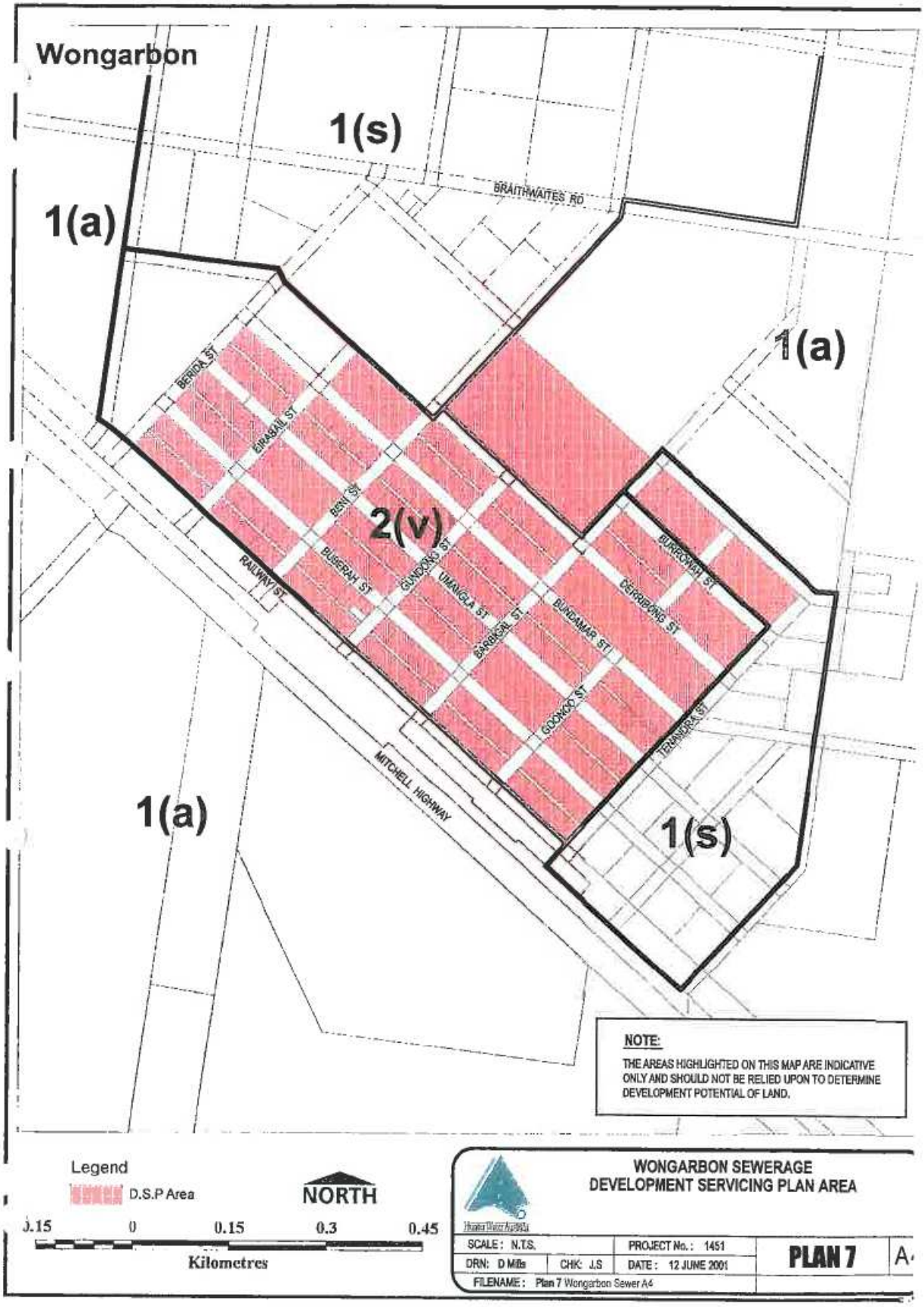
Plan 5 Brocklehurst Sewerage



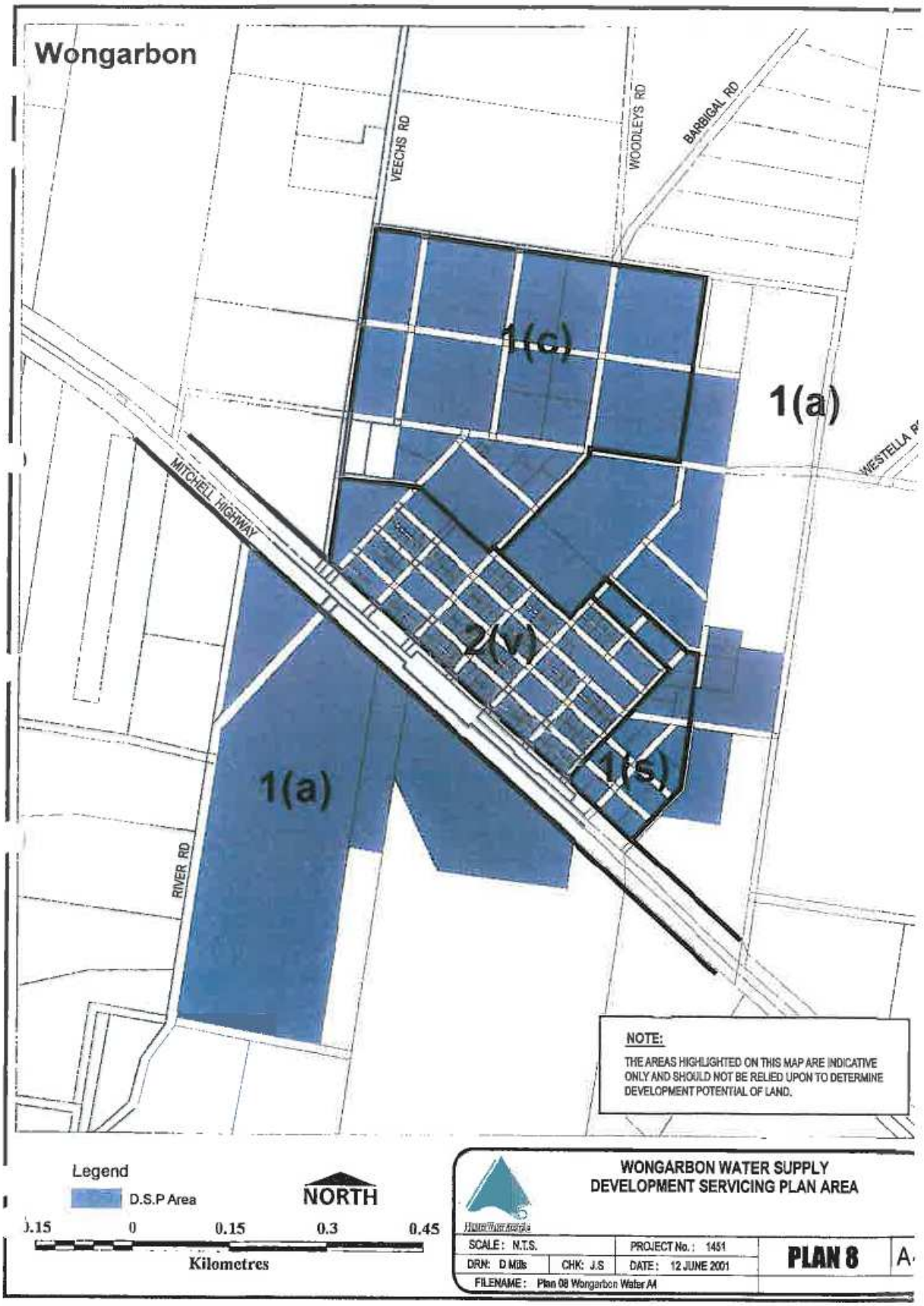
Plan 6 Eumungerie Water Supply



Plan 7 Wongarbon Sewerage



Plan 8 Wongarbon Water Supply



Appendix B

Population Projections - Dubbo City Council

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DUBBO CITY COUNCIL POPULATION PREDICTIONS

SOURCE	YEAR 1996	2001	2006	2011	2016	2021	2026	2031
STRATEGIC PLANNERS								
Urban								
1.47%	34602	37221	40039	43069	46329	49043	51973	54903
1.58%	34602	37423	40475	43775	47344	50275	53458	56642
2%	34602	38421	42262	46707	51619	55418	59650	63882
3%	34602	40013	46502	53909	62495	68409	75377	82345
City LGA								
1.47%	37908	40777	43864	47184	50756	53729	56939	60149
1.58%	37908	40999	44342	47957	51867	55077	58565	62053
2%	37908	41895	46300	51169	56551	60733	65389	70045
3%	37908	43946	50945	59059	68466	74934	82556	90179
Urban/LGA (1.47%)	91%	91%	91%	91%	91%	91%	91%	91%
CORPORATE PLAN								
City LGA								
1.50% Population	36553	39294	42242	45410	48815	52477	56412	60643
Tenements	12184	13186	14271	15445	16718	18095	19588	21204
DUBBO LGA ECONOMIC PROFILE (basis of *Dubbo's Growing Business*)								
City LGA	31000	32300	34000	35000	36330	37330	38801	40079
CURRENT DATA	Apr-01	Mar-01						
Assessments	13975	14747						
Water Assessments	11939	12813	(87% of total)					
Sge Assessments	11280	11905	(93% of water)					

WATER, SEWERAGE POPULATIONS SERVED

Water population served is based on the urban area plus Wongarbon.

Urban (1.47%)	34602	37221	40039	43069	46329	49043	51973	54903
Wongarbon (0.8%)	380	395	411	427	445	462	481	500
TOTAL (EP)	34982	37616	40450	43496	46774	49505	52454	55403
Occ. Ratio	3.00	2.98	2.96	2.94	2.92	2.90	2.88	2.86
TOTAL (ET)	11661	12623	13666	14795	16018	17071	18213	19372

Sewerage population served is based on 93% of the urban area plus Wongarbon, in 2006 and thereafter.

Urban (1.47%)	34602	37221	40039	43069	46329	49043	51973	54903
93% of Urban	32180	34616	37236	40054	43086	45610	48335	51060
Wongarbon (0.8%)			411	427	445	462	481	500
TOTAL (EP)	32180	34616	37647	40482	43531	46072	48816	51560
Occ. Ratio	3.00	2.98	2.96	2.94	2.92	2.90	2.88	2.86
TOTAL (ET)	10727	11616	12719	13769	14908	15887	16950	18028

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Appendix C

Developer Contribution Model (Water Supply System)

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Hunter Water Australia

DEVELOPER CHARGES MODEL

Dubbo Water Supply System

Year : 2001

Summary of Charges

Catchment	Dubbo Water Supply System

1.0 INPUT DATA

YEAR OF CALCULATION	2001

DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED BEFORE 1 JANUARY 1996:	3%
DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED ON OR AFTER 1 JANUARY 1996:	7%
DISCOUNT RATE (pa) FOR EXPECTED NET REVENUES AND COSTS:	7%

2.0 RESULTS

CAPITAL CHARGES TREATMENT (per ET)	$5,162
REDUCTION AMOUNT (per ET)	$1,360
TOTAL DEVELOPER CHARGE per ET	**$3,802**

Calculation of Reduction Amount

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Incremental Demand (ET)	199	202	205	208	212	215	219	222	226	229	233	237	241	245	249	253	205	208	210	213	216
Cum. Total Demand (ET)	12623	12825	13030	13239	13450	13666	13884	14106	14332	14562	14795	15032	15273	15517	15766	16018	16223	16431	16642	16855	17071
Total Income ($)	5845920	6057579	6154339	6253014	6345501	6448287	6551073	6653859	6756645	6859431	6962217	7065003	7167789	7270575	7373361	7476147	7578933	7681719	7784505	7887291	7990077
Total Cost ($)	3829473	3418238	3659671	3723173	3868883	3866999	3983009	4102499	4225574	4352341	4482912	4617399	4755921	4898599	5045557	5196923	5352831	5513416	5678818	5849183	6024658
Income per ET	463.12																				
Cost per ET	303.38																				
Income	91973.591	93533.911	95030.441	96550.915	98095.716	99665.234	101293.39	102914.6	104561.77	106235.3	107935.61	109763.85	111522.25	113308.82	115124.01	116968.28	95006.089	96222.811	97455.115	98703.201	99967.27
Cost	60248.923	61271.038	62251.366	63247.379	64259.329	65287.469	66354.02	67416.026	68495.031	69591.305	70705.124	71902.746	73054.618	74224.943	75414.016	76622.137	62235.414	63032.449	63839.692	64657.272	65485.324
Surplus	31724.668	32262.873	32779.074	33303.535	33836.387	34377.765	34939.367	35498.578	36066.738	36643.992	37230.485	37861.104	38467.634	39083.88	39709.998	40346.147	32770.675	33190.362	33615.423	34045.928	34481.947
Cum. Surplus	31724.668	63987.541	96766.616	130070.15	163906.54	198284.3	233223.67	268722.25	304788.99	341432.98	378663.46	416524.57	454992.2	494076.08	533786.08	574132.22	606902.9	640093.26	673708.68	707754.61	742236.56

NPV Operating Profit (Loss) per ET $1,360

Demand Profile

Catchment - Dubbo Water Supply System

Year	Total Demand (ET)	Annual Demand Increase (ET)
1970	4035	162
1971	4204	169
1972	4378	174
1973	4560	182
1974	4749	189
1975	4946	197
1976	5152	205
1977	5409	257
1978	5679	270
1979	5962	283
1980	6260	298
1981	6573	312
1982	6696	123
1983	6821	126
1984	6949	128
1985	7080	130
1986	7213	133
1987	7439	226
1988	7672	233
1989	7912	240
1990	8160	248
1991	8416	256
1992	8983	567
1993	9588	605
1994	10235	646
1995	10924	690
1996	11661	736
1997	11847	186
1998	12036	189
1999	12229	192
2000	12424	195
2001	12623	199
2002	12825	202
2003	13030	205
2004	13239	208
2005	13450	212
2006	13666	215
2007	13884	219
2008	14106	222
2009	14332	226
2010	14562	229
2011	14795	233
2012	15032	237
2013	15273	241
2014	15517	245
2015	15766	249
2016	16018	253
2017	16223	205
2018	16431	208
2019	16642	210
2020	16855	213
2021	17071	216
2022	17071	
2023	17071	
2024	17071	
2025	17071	
2026	17071	
2027	17071	
2028	17071	
2029	17071	
2030	17071	
2031		

Asset Schedule

Catchment - Dubbo Water Supply System

Year	Expenditure Existing (Pre 1996)	Expenditure Future (Post 1996)	Description
	$MEERA	$ACTUAL	
1	*2*	*4*	
1970	2,458,902	-	ABOVE GROUND: Buninyong Reservoir No 1 BELOW GROUND: Diam = mm, Length = 0m
1971	0	-	
1972	210,540	-	ABOVE GROUND: Riverbank bore BELOW GROUND: Diam = mm, Length = 0m
1973	65,754	-	ABOVE GROUND: West Dubbo PS
1974	313,370	-	BELOW GROUND: Diam = mm, Length = 0m
1975	587,198	-	ABOVE GROUND: Ronald Street Bore, Driftwell Bore, Harpers Bore BELOW GROUND: Diam = mm, Length = 0m
1976	0	-	
1977	291,450	-	BELOW GROUND: Diam = mm, Length = 0m
1978	413,600	-	BELOW GROUND: Diam = mm, Length = 0m
1979	1,955,016	-	ABOVE GROUND: Shibbles Bore 1, Shibbles Bore 2, Wheelers Lane Bore, Ronald Street BELOW GROUND: Diam = mm, Length = 0m
1980	12,294,534	-	ABOVE GROUND: Water Treatment Plant BELOW GROUND: Diam = mm, Length = 0m
1981	51,490	-	BELOW GROUND: Diam = mm, Length = 0m
1982	105,785	-	ABOVE GROUND: Elston Park PS BELOW GROUND: Diam = mm, Length = 0m
1983	1,745,370	-	BELOW GROUND: Diam = mm, Length = 0m
1984	4,096,442	-	ABOVE GROUND: Myall Street PS 2, Newtown Reservoir 1, Myall Street Reservoir 2, Rifle Range Reservoir BELOW GROUND: Diam = mm, Length = 0m
1985	3,040,010	-	BELOW GROUND: Diam = mm, Length = 0m
1986	235,984	-	ABOVE GROUND: Thorby Ave Bore BELOW GROUND: Diam = mm, Length = 0m
1987	81,890	-	BELOW GROUND: Diam = mm, Length = 0m
1988	2,860	-	BELOW GROUND: Diam = mm, Length = 0m
1989	0	-	
1990	167,246	-	ABOVE GROUND: No Name ********** BELOW GROUND: Diam = mm, Length = 0m
1991	91,483	-	ABOVE GROUND: Newtown PS
1992	242,070	-	BELOW GROUND: Diam = mm, Length = 0m
1993	107,760	-	BELOW GROUND: Diam = mm, Length = 0m
1994	91,313	-	ABOVE GROUND: No Name ********** BELOW GROUND: Diam = mm, Length = 0m
1995	70,750	-	BELOW GROUND: Diam = mm, Length = 0m
1996	-	2,488,683	ABOVE GROUND: Yarrandale Reservoir BELOW GROUND: Diam = mm, Length = 0m
1997	-	2,643,618	ABOVE GROUND: Buninyong Reservoir No 2 BELOW GROUND: Diam = mm, Length = 0m
1998	-	198,997	ABOVE GROUND: No Name ********** BELOW GROUND: Diam = mm, Length = 0m
1999	-	294,270	BELOW GROUND: Diam = mm, Length = 0m
2000	-	1,787,955	ABOVE GROUND: Wongarbon PS, Wongarbon Reservoir BELOW GROUND: Diam = mm, Length = 0m
2001	-	0	
2002	-	3,126,000	FUTURE WORKS: Pipelines - Sheraton/Buninyong (3.1km, DN 300) (S) Pipelines - Sheraton/Buninyong (3.1km, DN 300) (C) Pipelines - Sheraton/Buninyong (3.1km, DN 300) (PC) Pipelines - Camp Rd/Rifle Range Rd (3.7km, DN 200) (PC) Pipelines - Camp Rd/Rifle Range Rd, (3.7km, DN 200) (S) Pipelines - Camp Rd/Rifle Range Rd, (3.7km, DN 200) (C) Pipelines - Obley/Newell Hwy, (0.9km, DN 300) (PC) Pipelines - Darling (Bultje/Erskine) (0.9km, DN 300) (PC) Pipelines - WTP/Wheelers Ln (1.8km, DN 600) (S) Pipelines - WTP/Wheelers Ln (1.8km, DN 600) (C) Pipelines - Newell/Minore Rd, (2km, DN 300) (PC) J.Gilbert WTP - Sludge Lagoons, Stage 4 (C,S) J.Gilbert WTP - New RW Pump No. 3 - Civil (C) J.Gilbert WTP - New RW Pump No. 3 - Pump (C) J.Gilbert WTP - New RW Pump No. 3 - Motor (C) J.Gilbert WTP - New RW Pump No. 3 - Power Supply (C) New WTP (30ML/D) - Option Study (PC) New WTP

			(30ML/D) - Environment Review (PC) New WTP (30ML/D) - Prepare D&C Docs (PC) New WTP (30ML/D) - Project Management (S)
2003	-	9,430,000	FUTURE WORKS: Pipelines - Obley/Newell Hwy, (0.9km, DN 300) (S) Pipelines - Obley/Newell Hwy (0.9km, DN 300 (C) Pipelines - Darling (Bultje/Erskine) (0.9km, DN 300) (S) Pipelines - Darling (Bultje/Erskine)(0.9km, DN300) (C) Pipelines - Tamworth (Fitzroy/Darling) (0.6km, DN 300) (PC) Pipelines - Minore Rd (1.1km, DN300) (PC) Pipelines - Newell/Minore Rd (2km, DN 300) (S) Pipelines - Newell/Minore Rd (2km, DN 300) (C) Myall Street Reservoir 3, (5ML) - (PC) New WTP (30ML/D) - Project Management (S) New WTP (30ML/D) - Design & Construction (C) South Dubbo Oval & Park RW Scheme - Pipeline, PS (S) South Dubbo Oval & Park RW Scheme - Pipeline, PS (C) Ballimore Water Supply Scheme (S) Ballimore Water Supply Scheme (C) Eumungerie Water Supply Scheme (PC)
2004	-	8,386,000	FUTURE WORKS: Pipelines - Myall Res/Yarrandale PS (0.7km, DN 300) (PC) Pipelines - Tamworth (Fitzroy/Darling) (0.6km, DN 300) (S) Pipelines - Tamworth (Fitzroy/Darling) (0.6km, DN 300) (C) Pipelines - Elston Pk/Brigalow (1.1km, DN 300) (PC) Pipelines - Minore Rd (1.1km, DN 300) (S) Pipelines - Minore Rd (1.1km, DN 300) (C) Myall Street Reservoir 3, (5ML) - (S) Myall Street Reservoir 3, (5ML) - (C) Macquarie River Weir - Fish Ladder (PC) Old WTP Demolition (PC) New WTP (30ML/D) - Project Management (S) New WTP (30ML/D) - Design & Construction (C) Lady Cutler RW Scheme - Irrigation (S) South Dubbo Oval and Park RW Scheme - Irrigation (PC) South Dubbo Oval and Park RW Scheme - Irrigation (S) South Dubbo Oval and Park RW Scheme - Irrigation (C) Eumungerie Water Supply Scheme (S) Eumungerie Water
2005	-	1,026,000	FUTURE WORKS: Pipelines - Myall Res/Yarrandale PS (0.7km, DN 300) (S) Pipelines - Myall Res/Yarrandale PS (0.7km, DN 300) (C) Pipelines - Elston Pk/Brigalow (1.1km, DN 300) (S) Pipelines - Elston Pk/Brigalow (1.1km, DN 300) (C) Macquarie River Weir - Fish Ladder (S) Macquarie River Weir - Fish Ladder (C) Old WTP Demolition (S) Old WTP Demolition (C) West Dubbo RW Scheme - Pipelines (PC) West Dubbo RW Scheme - Intake (Civil) (PC) West Dubbo RW Scheme - Intake (Mech/Elect) (PC) West Dubbo RW Scheme - Irrigation (PC) Lady Cutler RW Scheme - Irrigation (PC) Lady Cutler RW Scheme - Irrigation (C)
2006	-	994,000	FUTURE WORKS: Bourke Hill Reservoir 2, (7.5ML) - (PC) West Dubbo RW Scheme - Pipelines (S) West Dubbo RW Scheme - Pipelines (C) West Dubbo RW Scheme - Intake (Civil) (S) West Dubbo RW Scheme - Intake (Civil) (C) West Dubbo RW Scheme - Intake (Mech/Elect) (S) West Dubbo RW Scheme - Intake (Mech/Elect) (C) West Dubbo RW Scheme - Irrigation (S) West Dubbo RW Scheme - Irrigation (C) North East Parks RW Scheme - Pipeline (PC) East Dubbo RW Scheme - Trunk Main (PC) East Dubbo RW Scheme - Irrigation (PC)
2007	-	1,387,000	FUTURE WORKS: Pipelines - Newell/Rifle Range Res (4.0km, DN 300) (PC) Pipelines - Trunk Mains for Bourke Hill Res No 2 (PC) Bourke Hill Reservoir 2, (7.5ML) - (S) Bourke Hill Reservoir 2 (7.5ML) - (C) North East Parks RW Scheme - Pipeline (S) North East Parks RW Scheme - Pipeline (C) North East Parks RW Scheme - Bore Pump (PC, C, S) North East Parks RW Scheme - Irrigation (PC, C, S) East Dubbo RW Scheme - Trunk Main (S) East Dubbo RW
2008	-	1,729,000	FUTURE WORKS: Pipelines - Erskine St, PS/Myall Res (2.6km, DN 300) (PC) Pipelines - Newell/Rifle Range Res (4.0km, DN 300) (S) Pipelines - Newell/Rifle Range Res. (4.0km, DN 300) (C) Pipeline - Trunk Mains for Bourke Hill Res. No. 2 (S) Pipeline - Trunk Mains for Bourke Hill Res. No. 2 (C) East Dubbo RW Scheme - Trunk Main (S) East Dubbo RW Scheme - Trunk Main (C) East Dubbo RW Scheme - Irrigation (S) East Dubbo RW Scheme - Irrigation (C)
2009	-	1,157,000	FUTURE WORKS: Pipelines - Erskine St, PS/Myall Res (2.6km, DN 300) (S) Pipelines - Erskine St, PS/Myall Res (2.6km, DN 300) (C) Pipeline - Trunk Mains for Bourke Hill Res No. 2 (S) Pipeline - Trunk Mains for Bourke Hill Res No. 2
2010	-	85,000	FUTURE WORKS: Eulomogo Reservoir 2, (10ML) - (PC)
2011	-	1,291,000	FUTURE WORKS: Pipeline - Trunk Mains for Rifle Range Res No. 2 (PC) Eulomogo Reservoir 2, (10ML) - (S) Eulomogo Reservoir 2, (10ML) - (C)
2012	-	2,211,000	FUTURE WORKS: Pipelines - Sheraton/Eulomogo (6.1km, DN 300) (PC) Pipelines - Bultje (Darling/River) (0.8km, DN 300) (PC) Pipeline - Trunk Mains for Rifle Range Res No. 2 (S) Pipeline - Trunk Mains for Rifle Range Res No. 2 (C)
2013	-	2,533,000	FUTURE WORKS: Pipelines - Sheraton/Eulomogo (6.1km, DN 300) (S) Pipelines - Sheraton/Eulomogo (6.1km, DN 300) (C) Pipelines - Bultje (Darling/River) (0.8km, DN 300) (S) Pipelines - Bultje (Darling River) (0.8km, DN 300 (C) Pipeline - Trunk Mains for Rifle Range Res No. 2 (S) Pipeline - Trunk Mains for Rifle Range Res No. 2 (C)

2014	-	565,000	FUTURE WORKS: Pipelines - Sheraton/Eulomogo (6.1km, DN 300)(S) Pipelines - Sheraton/Eulomogo (6.1km, DN 300) (C) Rifle Range Reservoir 2, (10ML) - (PC)
2015	-	971,000	FUTURE WORKS: Rifle Range Reservoir 2, (10ML) - (S) Rifle Range Reservoir 2, (10ML) - (C)
2016	-	200,000	FUTURE WORKS: Pipelines - Trunk Mains for Minore Rd, Res (PC)
2017	-	1,555,000	FUTURE WORKS: Pipeline - Trunk Mains for Minore Rd, Res (S) Pipeline - Trunk Mains for Minore Rd, Res (C) Minore Road Reservoir, (12ML) - (PC)
2018	-	2,557,000	FUTURE WORKS: Pipeline - Trunk Mains for Minore Rd, Res (S) Pipeline - Trunk Mains for Minore Rd, Res (C) Minore Road Reservoir, (12ML) - (S) Minore Road Reservoir, (12ML) - (C) Minore Road Bulga Reservoir, (12ML) - (Access Road) (C) Minore Road Reservoir, (12ML) - (Land Matters) Augmentation of WTP (30ML/D) - Option Study (PC)
2019	-	230,000	FUTURE WORKS: Pipelines - Trunk Mains for Sappa Bulga Res (PC) Augmentation of WTP (30ML/D) - Env. Review (PC) Augmentation of WTP (30ML/D) - Documentation (PC)
2020	-	2,735,000	FUTURE WORKS: Pipeline - Trunk Mains for Sappa Bulga Res (S) Pipeline - Trunk Mains for Sappa Bulga Res (C) Sappa Bulga Reservoir, (12ML) - (PC) Augmentation of WTP (30ML/D) - Project Management (S) Augmentation of WTP (30ML/D) - Design Construction (C)
2021	-	3,707,000	FUTURE WORKS: Pipeline - Trunk Mains for Sappa Bulga Res (S) Pipeline - Trunk Mains for Sappa Bulga Res (C) Sappa Bulga Reservoir, (12ML) - (S) Sappa Bulga Reservoir, (12ML) - (C) Sappa Bulga Reservoir, (12ML) - Access Road (C) Sappa Bulga Reservoir (12ML) - (Land Matters) Augmentation of WTP (30ML/D) - Project Management (S) Augmentation of WTP (30ML/D) - Design, Construction (C)
2022	-	0	
2023	-	0	
2024	-	0	
2025	-	0	
2026	-	0	
2027	-	0	
2028	-	0	
2029	-	0	
2030	-	0	
Total	28,720,818	53,288,523	

Appendix D

Developer Contribution Model (Sewerage System)

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Hunter Water Australia

DEVELOPER CHARGES MODEL

Dubbo Sewerage System

Year : 2001

Summary of Charges

Catchment	Dubbo Sewerage System

1.0 INPUT DATA

YEAR OF CALCULATION	2001

DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED BEFORE 1 JANUARY 1996:	3%
DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED ON OR AFTER 1 JANUARY 1996:	7%
DISCOUNT RATE (pa) FOR EXPECTED NET REVENUES AND COSTS:	7%

2.0 RESULTS

CAPITAL CHARGES - TREATMENT and SYSTEM (per ET)	$5,844
REDUCTION AMOUNT (per ET)	$1,736
TOTAL DEVELOPER CHARGE per ET	**$4,107**

Calculation of Capital Cost

Catchment: Dubbo Sewerage System

YEAR OF CALCULATION: 2001

Assumptions

DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED BEFORE 1 JANUARY 1996:	3%
DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED ON OR AFTER 1 JANUARY 1996:	7%
DISCOUNT RATE (pa) FOR PROPOSED FUTURE ASSETS:	7%

Existing Assets (Pre 1996)

Year	Recoupable Capital Expenditure	Annual ET Take-up
	(MEERA $)	(ET)
1996	26,575,020	7123
1997		172
1998		175
1999		178
2000		181
2001		184
2002		213
2003		217
2004		220
2005		225
2006		229
2007		203
2008		207
2009		210
2010		213
2011		217
2012		221
2013		224
2014		228
2015		231
2016		235
2017		191
2018		193
2019		196
2020		198
2021		201
2022		-
2023		-
2024		-
2025		-
2026		-
2027		-
2028		-
2029		-
2030		-
2031		-
	NPV Charge ($/ET)	2487

Existing Assets (Post 1996)

Year	Recoupable Capital Expenditure	Annual ET Take-up
	$	(ET)
1996	1,489,150	7123
1997	164,970	172
1998	2,216,520	175
1999	0	178
2000	2,278,020	181
2001	0	184
2002	0	213
2003	0	217
2004	0	220
2005	0	225
2006	0	229
2007	0	203
2008	0	207
2009	0	210
2010	0	213
2011	0	217
2012	0	221
2013	0	224
2014	0	228
2015	0	231
2016	0	235
2017	0	191
2018	0	193
2019	0	196
2020	0	198
2021	0	201
2022	0	-
2023	0	-
2024	0	-
2025	0	-
2026	0	-
2027	0	-
2028	0	-
2029	0	-
2030	0	-
2031	0	-
	NPV Charge ($/ET)	561

Future Assets

Year	Recoupable Capital Expenditure	Annual ET Take-up
	($)	(ET)
1996	0	7123
1997	0	172
1998	0	175
1999	0	178
2000	0	181
2001	0	184
2002	9,153,000	213
2003	11,321,000	217
2004	4,405,000	220
2005	3,141,000	225
2006	2,421,000	229
2007	2,407,000	203
2008	697,000	207
2009	2,957,000	210
2010	957,000	213
2011	1,254,000	217
2012	1,701,000	221
2013	759,000	224
2014	1,493,000	228
2015	1,391,000	231
2016	2,580,000	235
2017	1,807,000	191
2018	1,548,000	193
2019	682,000	196
2020	2,927,000	198
2021	2,819,000	201
2022	0	-
2023	0	-
2024	0	-
2025	0	-
2026	0	-
2027	0	-
2028	0	-
2029	0	-
2030	0	-
2031	0	-
	NPV Charge ($/ET)	2796

TOTAL NPV CAPITAL WORKS CHARGE per ET	**$5,844**

Calculation of Reduction Amount

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Incremental Loading (ET)	184	213	217	220	225	229	203	207	210	213	217	221	224	228	231	235	191	193	196	198	201
Cum. Total Loading (ET)	11616	11829	12046	12266	12491	12720	12923	13130	13340	13553	13770	13991	14215	14443	14674	14909	15100	15293	15489	15687	15888
Total Income ($)	7357229	9036616	9288964	7989512	8605833	8115925	8255218	7921226	8106532	8232247	8459332	8677188	8900585	9181225	9428189	9661307	9908046	10330589	10341722	10618616	10792493
Total Cost ($)	5014465	5244850	5604422	5529546	5882644	6033906	6189202	6348642	6512341	6680416	6852986	7030177	7212116	7398934	7590765	7787749	7990027	8197747	8411058	8630116	8855081
Income per ET	633.37																				
Cost per ET	431.69																				
Income	116540.63	134908.45	137441.94	139342.06	142508.9272	145042.42	128574.72	131108.21	133008.33	134908.45	137441.94	139975.44	141875.55	144409.05	146309.17	148842.66	120974.24	122240.99	124141.11	125407.86	127307.97
Cost	79430.575	91949.524	93676.276	94971.34	97129.7791	98856.531	87632.645	89336.397	90654.46	91949.524	93676.276	95403.027	96698.091	98424.843	99719.907	101446.66	82452.39	83315.766	84610.83	85474.206	86769.269
Surplus	37110.059	42958.927	43765.667	44370.723	45379.14809	46185.888	40942.076	41748.816	42353.872	42958.927	43765.667	44572.408	45177.463	45984.203	46589.259	47395.999	38521.855	38925.225	39530.28	39933.65	40538.706
Cum. Surplus	37110.059	80068.986	123834.65	168205.38	213584.5237	259770.41	300712.49	342461.3	384815.18	427774.1	471539.77	516112.18	561289.64	607273.84	653863.1	701259.1	739780.96	778706.18	818236.46	858170.11	898708.82

NPV Operating Profit (Loss) per ET $1,736

Loading Profile

Catchment - Dubbo Sewerage System

Year	Total Demand (ET)	Annual Demand Increase (ET)
1970	3753	149
1971	3908	155
1972	4068	160
1973	4235	167
1974	4408	174
1975	4589	181
1976	4777	188
1977	5016	238
1978	5266	250
1979	5529	263
1980	5805	276
1981	6094	290
1982	6209	114
1983	6325	116
1984	6444	119
1985	6565	121
1986	6688	123
1987	6829	141
1988	6973	144
1989	7121	147
1990	7271	150
1991	7425	154
1992	7991	567
1993	8602	610
1994	9259	657
1995	9966	707
1996	10727	761
1997	10899	172
1998	11074	175
1999	11252	178
2000	11432	181
2001	11616	184
2002	11829	213
2003	12045	217
2004	12266	220
2005	12490	225
2006	12719	229
2007	12922	203
2008	13129	207
2009	13339	210
2010	13552	213
2011	13769	217
2012	13990	221
2013	14214	224
2014	14441	228
2015	14673	231
2016	14908	235
2017	15099	191
2018	15292	193
2019	15488	196
2020	15686	198
2021	15887	201
2022	15887	-
2023	15887	-
2024	15887	-
2025	15887	-
2026	15887	-
2027	15887	-
2028	15887	-
2029	15887	-
2030	15887	-
2031	15887	-

Asset Schedule

Catchment - Dubbo Sewerage System

Year	Expenditure Existing (Pre 1996)	Expenditure Future (Post 1996)	Description
	$MEERA	$ACTUAL	
1	*2*	*4*	
1970	266,900	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1971	41,900	-	BELOW GROUND: Diam = mm, Length = 0m
1972	323,780	-	BELOW GROUND: Diam = mm, Length = 0m
1973	730,370	-	BELOW GROUND: Diam = mm, Length = 0m
1974	793,620	-	BELOW GROUND: Diam = mm, Length = 0m
1975	1,397,870	-	BELOW GROUND: Diam = mm, Length = 0m
1976	80,550	-	BELOW GROUND: Diam = mm, Length = 0m
1977	33,240	-	BELOW GROUND: Diam = mm, Length = 0m
1978	374,140	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1979	253,500	-	BELOW GROUND: Diam = mm, Length = 0m
1980	2,754,200	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1981	2,248,260	-	BELOW GROUND: Diam = mm, Length = 0m
1982	549,040	-	BELOW GROUND: Diam = mm, Length = 0m
1983	3,606,550	-	BELOW GROUND: Diam = mm, Length = 0m
1984	58,900	-	BELOW GROUND: Diam = mm, Length = 0m
1985	66,880	-	BELOW GROUND: Diam = mm, Length = 0m
1986	11,265,900	-	ABOVE GROUND:
1987	0	-	
1988	22,750	-	BELOW GROUND: Diam = mm, Length = 0m
1989	414,090	-	BELOW GROUND: Diam = mm, Length = 0m
1990	82,090	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1991	552,360	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1992	234,260	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1993	99,720	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1994	102,100	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1995	222,050	-	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1996	-	1,489,150	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1997	-	164,970	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1998	-	2,216,520	ABOVE GROUND: BELOW GROUND: Diam = mm, Length = 0m
1999	-	0	
2000	-	2,278,020	BELOW GROUND: Diam = mm, Length = 0m
2001	-	0	
2002	-	9,153,000	FUTURE WORKS: Alfred Street SPS - (2500 ET) (203 L/s)(S) Alfred street SPS - Civil (2500 ET(203 L/s) (C) Alfred Street SPS - RM (0.8km, DN 300) (S) Alfred Street SPS - RM (0.8km, DN 300) (C) Bunglegumbie SPS - (7330 ET) (440 L/s) (S,C) Troy Gully SPS (Install Dry Well Pump 4) (S) Troy Gully SPS (Install Dry Well Pump 4) (C) Troy Gully Rising Main (TG - TJ STP) (4.4km, DN 600) (PC) Troy Gully Rising Main (TG-TJ STP) (4.4km DN, 600) (S) Troy Gully Rising Main (TG-TJ STP) (4.4km, DN 600) (C) RM Oxy Injection (PC) Troy Gully RM Oxy Injection (S) Troy Gully RM Oxy Injection (C) Troy Gully Sewage Overflow Storage (PC) Troy Gully Sewage Overflow Storage (C) Troy Gully Sewage Overflow Storage (S) Erskine Street SPS - Install 2, 300 L/s Sub Pumps (PC) Erskine Street SPS - Install 2, 300 L/s Sub Pumps (S) Erskine Street SPS - Install 2, 300 L/s Sub Pumps (C) Erskine Street SPS - Install 2, 300L/s Pumps (C) Erskine Street SPS Odour Control (C) Erskine Street SPS - Upgrade Rising Main (PC) Erskine Street SPS - Upgrade Rising
2003	-	11,321,000	FUTURE WORKS: Minore Rd, SPS - (1400 ET) (115 L/s) (PC) Minore Rd, SPS - Rising Main (2km, DN 300) (PC) Minore Rd, SPS - Rising Main (2km, DN 300) (S) Minore Rd, SPS - Rising Main (2km, DN 300) (C) Alfred Street SPS - (2500 ET) (203 L/s)(S) Alfred Street SPS - Mech/Elect (2500 ET) (203 L/s) (C) Alfred Street SPS - Civil (2500 ET) (203 L/s) (C) Alfred Street SPS - Building (C) Alfred Street SPS - Grav. Pipeline (C) Troy Gully Rising Main (TG-TJ STP) (4.4km, DN 600) (S) Troy Gully Rising Main (TG-TJ STP) (4.4km, DN 600) (C) Erskine Street SPS - Concrete Repairs (C) Yarrandale Sewerage - Stage 2 (GM) (PC) North Dubbo Sewerage - Retic, RM (S) North Dubbo Sewerage - Retic. RM (C) North Dubbo Sewerage - Pump Station (S) North Dubbo Sewerage - Pump Station (C) Keswick SPS - Septicity Control (S) Keswick SPS - Septicity Control (C) Sewer R Duplication - D34M3792 to E11M4156 (S) Sewer R

			Duplication - D34M3792 to E11M4156 (C) Sewer R Duplication - E13M3584 to D34M3792 (PC) Troy Junction
2004	-	4,405,000	FUTURE WORKS: Minore Rd, SPS (1400 ET) (115 L/s) (S) Minore Rd, SPS - Mech/Elect (1400 ET (115 L/s) (C) Minore Rd, SPS - Civil (1400 ET (115 L/s) (C) Minore Rd, SPS - Building (1400 ET) (115 L/s) (C) Minore Rd, SPS - Rising Main (2km, DN 300) (S) Minore Rd, SPS - Rising Main (2km, DN 300) (C) Yarrandale Sewerage - Stage 2 (GM) (S) Yarrandale Sewerage - Stage 2 (GM) (C) Yarrandale Sewerage - Stage 3 (500 ET) (43 L/s) (PC) Keswick SPS Stage 1 - Demolish Avian PS (C) Sewer R Duplication - E13M3584 to D34M3792 (S) Sewer R Duplication - E13M3584 to D34M3792 (C) Sewer R Duplication - E41M3420 to E13M3584 (PC) Bunglegumbie STP Remediation - Env. Monitoring Troy Junction STP Automation - Upgrade Troy Junction STP - New Ideal (25000 EP) (S) Troy Junction STP - New Ideal (25000 EP) (C) South Dubbo - Tamworth St PS Gravity Main 2 (C) South Dubbo - Demolish Macquarie St PS (C) Effluent Irrig. “Greengrove” - Pivots, Pipework (S) Effluent Irrig. “Greengrove” - Pivots, Pipework (C)
2005	-	3,141,000	FUTURE WORKS: Yarrandale Sewerage - Stage 3 (500 ET) (43 L/s) (S) Yarrandale Sewerage - Stage 3 (500 ET) 43 L/s), (C) Sewer R Duplication - E41M3420 to E13M3584 (S) Sewer R Duplication - E41M3420 to E13M3584 (C) Bunglegumbie STP Remediation - Env. Monitoring Bunglegumbie STP - Demolition (PC) Troy Junction STP Automation - Upgrade South Dubbo - Tamworth St PS Gravity Main 3 (C) Wongarbon Sewerage (S) Wongarbon Sewerage - Collection (C) Wongarbon Sewerage - Treatment (C) Camp Road Sewerage - Pumps (PC) Camp Road Sewerage - RM (4.6km, DN 150) (PC) Camp Road Sewerage - Septicity Control (PC) Eumungerie Sewerage Options Study
2006	-	2,421,000	FUTURE WORKS: Bunglegumbie STP Remediation - Env. Monitoring Bunglegumbie STP - Demolition (S) Bunglegumbie STP - Demolition (C) Camp Road Sewerage - Pumps (S) Camp Road Sewerage - Pumps (C) Camp Road Sewerage - RM (4.6km, DN 150) (S) Camp Road Sewerage - RM (4.6km, DN 150) (C) Camp Road Sewerage - Septicity Control (S) Camp Road Sewerage - Septicity Control (C) Eumungerie Sewerage (PC) Ballimore Sewerage (S) Ballimore Sewerage (C)
2007	-	2,407,000	FUTURE WORKS: Bunglegumbie STP Remediation - Env. Monitoring Bunglegumbie Remediation (C) Additional Effluent Irrigation - Buy Land (C) Eumungerie Sewerage (S) Eumungerie Sewerage (C)
2008	-	697,000	FUTURE WORKS: Bunglegumbie STP Remediation - Env. Monitoring Bunglegumbie Remediation (C) West Dubbo Sewerage - Catchment C (PC)
2009	-	2,957,000	FUTURE WORKS: Cootha SPS - Upgrade (795 ET, 67 L/s) (PC) Bunglegumbie STP Remediation - Env. Monitoring Bunglegumbie Remediation (C) Additional Effluent Irrigation - Irrig Sys. (C) West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C).
2010	-	957,000	FUTURE WORKS: Cootha SPS - Upgrade (795 ET, 67 L/s) - Mech/Elect Cootha SPS - Upgrade (795 ET, 67 L/s) - Civil, Bunglegumbie STP Remediation - Env. Monitoring West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C) West Dubbo Sewerage - Catchment A (PC)
2011	-	1,254,000	FUTURE WORKS: Keswick SPS Stage 2 - RM (1.2km, DN 300) (PC) Troy Junction STP Effluent Storage Pond 3 (290ML) (PC) Bunglegumbie STP Remediation - Env. Monitoring West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2012	-	1,701,000	FUTURE WORKS: Keswick SPS Stage 2 - RM (1.2km, DN 300) (S) Keswick SPS Stage 2 - RM (1.2km, DN 300) (C) Troy Junction STP Effluent Storage Pond 3 (290 ML) (S) Troy Junction STP Effluent Storage Pond 3 (290ML) (C) West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2013	-	759,000	FUTURE WORKS: Keswick SPS Stage 2 - Catchment B, GM (PC) West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2014	-	1,493,000	FUTURE WORKS: Keswick SPS Stage 2 - Catchment B, GM 1 (S) Keswick SPS Stage 2 - Catchment B, GM 1 (C) West Dubbo Sewerage - Catchment C (S) West Dubbo Sewerage - Catchment C (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2015	-	1,391,000	FUTURE WORKS: Keswick SPS Stage 2 - Catchment B, GM 2 (S) Keswick SPS Stage 2 - Catchment B, GM 2 (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2016	-	2,580,000	FUTURE WORKS: Additional Effluent Irrigation - Buy Land (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)

2017	-	1,807,000	FUTURE WORKS: Troy Junction STP - Clarifier No. 3 (PC) Additional Effluent Irrigation - Irrig. Sys. (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2018	-	1,548,000	FUTURE WORKS: Troy Junction STP - Clarifier No. 3 (S) Troy Junction STP - Clarifier No. 3 (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2019	-	682,000	FUTURE WORKS: Troy Junction STP - Second Ideal (25000 EP) (PC) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2020	-	2,927,000	FUTURE WORKS: Troy Junction STP - Second Ideal (25000 EP) (S) Troy Junction STP - Second Ideal (25000 EP) (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2021	-	2,819,000	FUTURE WORKS: Troy Junction STP - Second Ideal (25000 EP) (S) Troy Junction STP - Second Ideal (25000 EP) (C) Additional Effluent Irrigation - Irrig. Sys. (C) West Dubbo Sewerage - Catchment A (S) West Dubbo Sewerage - Catchment A (C)
2022	-	0	
2023	-	0	
2024	-	0	
2025	-	0	
2026	-	0	
2027	-	0	
2028	-	0	
2029	-	0	
2030	-	0	
Total	26,575,020	62,568,660	

Appendix E

ET Equivalence of Sewerage Customers

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Appendix B

CLASSIFICATION	MODULE	UNIT ADOPTED	ET/UNIT	STORM ALLOWANCE (L/s)
Residential (Unit Basis)	Single Cottage, Flat, Home Unit, Town House (Individual allotment thereof)	Tenement Flat	1 2/3	0.058/Unit 0.058/Module
Residential (Area Basis)	Single Dwelling Zone (30-50 persons/hectare) Medium Density Zone (60-150 persons/hectare) High Density Zone (150-250 persons/hectare) Abnormal Density Zone (250-500 persons/hectare) Intensive Density Zone (500 persons/hectare)	Gross Hectare Gross Hectare Gross Hectare Gross Hectare Gross Hectare	10 25 50 100 150	0.58/Unit 0.58/Unit 0.58/Unit 0.58/Unit 0.58/Unit

Note: Gross Hectare - total area of zone
Built-up Hectare - floor area of building
Net Hectare - area of land not including that set aside as public road or park

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Appendix B

CLASSIFICATION	MODULE	UNIT ADOPTED	ET/UNIT	STORM ALLOWANCE (L/s)
New Residential	Hospital	Bed	1	0.58/Module
	Military Camp	Soldier	1/6	0.58/Module
	Hostel	Bed	1/8	0.58/Module
	Day School	Pupil	1/25	0.58/Module
	Boarding School	Pupil	1/6	0.58/Module
	Hotel	Built-up Hectare	100	0.058/Module
	Motel	Bed	1/8	0.058/Module
	Club (licensed)	Occupant	1/25	0.058/Module
	Public Toilets	WC or Urinal	1/2	0.058/Module
Commercial	Shops etc.	Occupant	1/25	0.058/Module
(i) Unit Basis	High Density Zone	Built-up Hectare (floor area for multi-storey)	10	0.58/Net Ha
(ii) Area Basis				
Entertainment	Showground	Visitor	1/100	0.58/Module
	Racecourse etc			
	Caravan Park	Van lot	1/2	0.58/Module
	Swimming Pool	Complex	15-25	0.58/Module
Industrial	Multi Purpose	Gross Hectare	30-50	0.58/Unit
	Future use unknown			
	Clean Dry Trades (no showers)	Gross Hectare	2-4	0.58/Unit
	Dirty Dry Trades (with showers)	Gross Hectare	4-10	0.58/Unit

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Appendix B

CLASSIFICATION	MODULE	UNIT ADOPTED	ET/UNIT	STORM ALLOWANCE (L/s)
Wet Industrial: (a) Meal Preparation	Restaurant) Cafeteria) Canteen) Caterers)	Built-up Hectare	80	0.058/Module
(b) Food Manufacturer: (i) Dairy	 Milk Cheese Ice-Cream	 Built-up Hectare	 1400 850 350	 0.58/Net Hectare
(ii) Fruit and Vegetables	Cannery) Condiments) Sauces)	Built-up Hectare	550	0.58/Net Hectare
(iii) Meat	Abattoir Rendering Tallow Gelatine and Glue Poultry Small Goods	Built-up Hectare	550 300 850 1100 550	0.58/Net Hectare
(iv) Grain	Flour Milling Starch Edible Oils and Fats Cereals Bakery Biscuits and Cakes	Built-up Hectare	15 850 1100 150 15 150	0.58/Net Hectare
(v) Beverages	Beer Soft Drinks and Cordials	Built-up Hectare	550 300	0.58/Net Hectare
(vi) Others	Yeast Confectionery Salt	Built-up Hectare	1100 80 300	0.58/Net Hectare

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Appendix B

CLASSIFICATION	MODULE	UNIT ADOPTED	ET/UNIT	STORM ALLOWANCE (L/s)
(c) Textiles and Leather	Tannery and Hides Wool Scour Felt and Carpet Wool Dyeing and Spinning Cotton and Synthetic Dyeing and Spinning	Built-up Hectare	550 1100 300 300 550	0.58/Net Hectare
(d) Chemicals	Oil Refinery Pharmaceutical Organic Liquids Resins, Polymers and Plastics Adhesives Soaps and Detergents Paint Manufacturing	Net Hectare Built-up Hectare	15 150 300 300 300 150 80	0.58/Net Hectare 0.58/Net Hectare
(e) Metal Processing	Electroplating Anodising Galvanising Batteries	Built-up Hectare	300 300 300 150	0.58/Net Hectare
(f) Non-Metallic Manufacture	Paper Wood Glass Asbestos Cement	Built-up Hectare	80 80 80 40	0.58/Net Hectare
(g) Services	Laundries Laboratories Film Processing		2100 550 300	
Dry Industrial	Clean Trade (no showers) Dirty Trade (with showers)	Employee Employee	1/25 1/10	0.58/Module 0.58/Module