

POL181-Utilities
Development Servicing Plan for Water & Sewerage

Applies to:	<i>Utilities and Development Consent Unit</i>
Officer Responsible	<i>Utilities Services Manager</i>
Associated Documents	<i>All related Standard Practice Notes, Policies and Procedures</i>
Legislation	<i>Water Management Act 2000, Local Government Act 1993.</i>
History	<i>Version I - 14 September 2007</i> <i>Version II – June 2009</i>

OBJECTIVES

The objectives of this policy are:

- To enable Council to require a contribution towards the provision of water supply and sewerage facilities before development which will create a demand for those facilities can occur.
- To enable Council to recoup funds that it has spent in the provision of public facilities in anticipation of development.
- To ensure that adequate public facilities are provided for and as part of any new development.
- To ensure that the existing community is not burdened by the provision of public facilities required as a result of future development.
- To Provide a comprehensive strategy for the assessment, collection, expenditure, accounting and review of contributions on an equitable basis.
- To provide developers with clear guidance as to the contributions payable for water supply and sewerage Developer Charges.

OVERVIEW

This policy has been developed under Section 64 of the Local Government Act 1993 by means of a cross-reference in that Act to sections 305 to 307 of the Water Management Act 2000.

It conforms to guidelines expressed in *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* issued by the NSW Department of Land and Water Conservation in December 2002. These Guidelines were prepared to conform with the Independent Pricing and Regulatory Tribunal of NSW Determination No. 9, 2000 on Developer Charges.

It deals with calculation of a fair and equitable Developer Charge, the Developer Charge adopted by Council, assessment of equivalent tenements, preferred areas of development and

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servicing requirements, the implementation and administration of the water supply and sewerage Developer Charges, and when Developer Charges are payable.



Armidale Dumaresq Council

Water Supply & Sewerage Development Servicing Plan

Amended July 2009

An ADC Utilities Management Initiative

frPlan

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**Adopted at Ordinary Council Meeting
held 18 December 2006**

See Council Minute No. 11.076/06*

**Amended at Ordinary Council Meeting
held 23 July 2007**

See Council Minute No. 11.033/07*

**Amended by Governance & Risk Committee Meeting
Held 6 July 2009 – see Minute No 6.1**

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FOREWORD

This first edition document was developed pursuant to Section 306 (3) of the Water Management Act 2000 and the NSW State Government requirement for demonstration of "Best Management Practice", "Long Term Sustainability", and "International Competitiveness" at all levels of Local Government and in all activity.

The development of this first Development Servicing Plan is an important step forward in the management of the water and sewerage businesses as it strengthens previous and current actions. It also facilitates further initiatives in pursuit of "Best Management Practice".

The Plan generally follows the *"Model Development Servicing Plan"* published by the NSW Department of Land and Water Conservation (now the NSW Department of Energy Utilities and Sustainability) in December 2002 as part of its *"Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002)"*.

The Plan is a dynamic management aid. To remain relevant it requires periodic review and refocus. This review is expected to take place at 5 to 6 year intervals but may be updated to accommodate unexpected development.

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DEVELOPMENT SERVICING PLAN FOR THE CITY OF ARMIDALE AND ADJOINING AREAS

1. SUMMARY

This DSP covers water supply and sewerage developer charges related to development areas serviced by Armidale Dumaresq Council.

It has been prepared in accordance with the *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002)* issued by the NSW Minister for Land and Water Conservation pursuant to Section 306 (3) of the *Water Management Act 2000*.

The areas covered by this DSP, and the existing and proposed works servicing the area are shown on the plans in section 14 commencing on page 19.

The demand for and the timing of construction of new infrastructure is essentially developer driven. To facilitate preparation of this Plan and in association with the new Armidale Dumaresq Local Environmental Plan, a possible program of works over the next 5 years has been estimated for and included in the calculations to determine the developer charges. In practice, the actual program could vary somewhat depending on developer demand, however the overall quantum of work will be the same.

Standards of service to be provided in the DSP areas are summarised in section 7.1 - Water Supply and section 7.2 – Sewerage at pages 7-8.

The water supply and sewerage developer charges for the areas covered by this DSP have been calculated and adopted by Council as follows:

	Full Developer Charge (\$ per ET)	Adopted Developer Charge (\$ per ET)
Water Supply	\$4,520 / ET	60% of Full Developer Charge from 1 January 2007 to 30 June 2007. 80% of Full Developer Charge from 1 July 2007 to 30 June 2008. 100% of Full Developer Charge from 1 July 2008.
Sewerage	\$4,060 / ET	

If the Developer chooses to provide all necessary system amplification works to extend the water supply or sewerage system to their development at their cost the Developer Charge will be discounted by the cost of the amplification works carried out up to a maximum equal to the Developer Charges as calculated using the figures above. Reticulation works associated with and internal to the development will not be considered for determination of the discount value.

Developer charges relating to this DSP will be reviewed after a period of 5 to 6 years.

In the period between reviews, developer charges will be adjusted annually on the basis of the movements in the CPI for Sydney, excluding the impact of GST.

The developer shall be responsible for the full cost of the design and construction of water supply and sewerage reticulation works within subdivisions.

Developments in areas not covered by this DSP would need to provide all necessary system amplification works at the developer's cost in addition to paying the general Developer Charge.

Reference documents containing background information and calculations relating to this DSP can be reviewed in Council's offices by appointment. To review the documents please contact Council's the Utilities Manager or Utilities Senior Engineer.

2. INTRODUCTION

Section 64 of the *Local Government Act 1993* enables a local government council to levy developer charges for water supply, sewerage and stormwater. This derives from a cross-reference in that Act to section 306 of the *Water Management Act 2000*.

A Development Servicing Plan (DSP) is a document which details the water supply and sewerage developer charges to be levied on development areas utilising a water utility's water supply and sewerage infrastructure.

This DSP covers water supply and sewerage developer charges in regard to the development areas served by Armidale Dumaresq Council.

This DSP has been prepared in accordance with the *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (2002)* issued by the NSW Minister for Land and Water Conservation pursuant to Section 306 (3) of the *Water Management Act 2000*.

This DSP supersedes any other requirements related to previous water supply and sewerage headworks or contribution plan charges for the area covered by this DSP. This DSP takes precedence over any of Council's codes or policies where there are any inconsistencies relating to water supply and sewerage developer charges.

3. AIMS AND OBJECTIVES

The aims and objectives of this DSP are:

- a) Enable Council to require a contribution towards the provision of water supply and sewerage facilities before development which will create a demand for those facilities can occur.
- b) Enable Council to recoup funds that it has spent in the provision of public facilities in anticipation of development.
- c) Ensure that adequate public facilities are provided for and as part of any new

development.

- d) Ensure that the existing community is not burdened by the provision of public facilities required as a result of future development.
- e) Provide a comprehensive strategy for the assessment, collection, expenditure, accounting and review of contributions on an equitable basis.
- f) Provide developers with clear guidance as to the contributions payable for water supply and sewerage Developer Charges.

4. ADMINISTRATION

DSP Name	Water Supply DSP No. 1
DSP Area	The area covered by this DSP is shown on Plan 1 at page 22.
DSP Boundaries	<p>The basis for defining the DSP area boundaries is as follows:</p> <p>The boundaries include the current developed areas supplied with treated town water and have been extended to include the adjacent development areas that are able to be serviced without amplification of existing major infrastructure.</p>
Payment of Developer Charges	<p>Developer Charges can be associated with development proposals such as subdivision or change of use that increases demand on the system, or where development approval is not required such as the provision of water supply and/or sewerage to existing properties or parcels of land.</p> <p>Associated with development in which additional infrastructure will be created and taken over by Council on completion of and acceptance by Council, the relevant charges will be specified in the development approval process and the value of the charge will be the charge listed in the Fees and Charges section of Council’s Management Plan at the date of application for a certificate of compliance pursuant to Section 305 of the Water Management Act 2000 and payable before the issue of the Certificate. It should be noted that the value of the charge may differ from the advised charge in the Development Consent, current at the date of the Consent, due to the annual CPI adjustment or due to a review of the DSP and the calculation of the Developer Charges. The value of the Charges will be published each year in the Fees and Charges section of Council’s Management Plan.</p> <p>Associated with development that increases demand on the system but for which additional infrastructure will not be created, the relevant charges due will be specified in the development approval process and the value of the charge will be the charge listed in the Fees and Charges section of Council’s Management Plan at the date of issue of a Construction Certificate or Occupation Certificate or on completion of work but prior to Commencement</p>

	<p>of Use as the case may be.</p> <p>Associated with the connection of water supply and/or sewerage to existing property or land, the charge is applied through the water and/or sewer service application process and the amount payable is the charge applicable in the Fees and Charges section of Council's Management Plan at the date of settlement of the account.</p>
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DSP Name	Sewerage DSP No. 1
DSP Area	The area covered by this DSP is shown on Plan 2 at page 25.
DSP Boundaries	<p>The basis for defining the DSP area boundaries is as follows:</p> <p>The boundaries include the current developed areas serviced by the existing sewerage system and have been extended to include the adjacent development areas that are readily able to be serviced without amplification of existing major infrastructure.</p>
Payment of Developer Charges	As for Water Supply DSP No. 1

A Developer Charge is made up of separate Existing Works and New Works components.

The Developer Charge has been calculated on the basis of the cost of constructing existing headworks and distribution infrastructure and Council constructing the necessary new headworks and distribution infrastructure in sequence from the end of existing infrastructure to service anticipated new development within medium to long term financial and asset management constraints. Construction of new infrastructure to service new development can be either in sequence or out of sequence and this is addressed later in this section.

4.1 Assessment of Equivalent Tenements (ET's)

Details for assessment of the number of ET's that incur Developer Charges are contained in Appendix B on page 42. They are based upon Standard ET's as defined using the Suggested Values in "Section 64 Determinations of Equivalent Tenements Guidelines" prepared by NSW Water Directorate in January 2005 on behalf of member councils and periodically updated.

One ET credit will be given to an existing block of land that has been paying into the Water Fund and/or Sewer Fund via water supply and/or sewerage charges for at least 10 years.

In addition, for commercial or industrial development, a development incentive subsidy for developer charges may be available to special or worthy development through Council's Developer Incentive Fund.

4.2 Developments where the required distribution infrastructure has already been constructed

In this case the Developer will be required to pay the full Developer Charge for each ET as assessed under "Section 64 Determinations of Equivalent Tenements Guidelines" as issued by

NSW Water Directorate in January 2005 (see Appendix B at page 42).

4.3 Developments where the required distribution infrastructure has to be constructed and is in sequence with existing infrastructure.

In sequence means that the development land is relatively close to the end of existing infrastructure and the total developer charges applicable to the development will cover the cost of the work as assessed by Council.

In this case Council will construct the necessary additional infrastructure to service the development and the Developer will be required to pay the full Developer Charge for each ET as assessed under "Section 64 Determinations of Equivalent Tenements Guidelines" as issued by NSW Water Directorate in January 2005 (see Appendix B at page 42).

4.4 Developments where the required distribution infrastructure has to be constructed and it is not in sequence with existing infrastructure.

In this case the development land is a significant distance from the end of existing infrastructure and construction costs, as assessed by Council, are in excess of the total developer charges applicable to the development.

The Developer will be required to provide all necessary infrastructure to service the development but sized to service additional future or nearby development as specified by Council in accordance with Council's long-term planning.

The cost of the amplification works provided by the developer will be discounted up to the maximum value of the developer charges for the development. In other words, developer charges will not have to be paid if the cost of the works as assessed by Council exceeds the total of the developer charges.

4.5 Developments outside the development area covered by this DSP

For developments in areas not covered by this DSP, the Developer will be required to provide all necessary system amplification works at the developer's cost in addition to paying the developer charge.

4.6 Waiver of All or Part of Developer Charges

Council may agree with the applicant or developer to the waiver of all or part of Developer Charges covered by this Plan in accordance with Council's Economic Development and Incentives Policy POL001*-Corporate.

Any subsidy under this clause would normally be funded by financial transfer from Council's Economic Incentives Fund to its Water Fund and/or Sewer Fund.

5. DEMOGRAPHIC AND LAND USE PLANNING INFORMATION

5.1 Growth Projections

Growth projections for population and number of ET's are shown in the tables below. These projections are for the years from 2003/04 to 2015/16 (a census year). The base populations for 2003/04 are as calculated for Council's annual statistical report to the NSW Government. The anticipated rates of residential growth are assumed to remain steady at 1% per annum. The ET's in this case are in terms of revenue from annual rates and charges, **not** water usage.

Table 1 – Growth Projections for the area covered by Water Supply DSP No. 1.

Year	Population	Number of Equivalent Tenements	Cumulative Number of ET's
2003/04	20,271	10,067	10,067
2004/05	20,474	69	10,136
2005/06	20,678	70	10,206
2006/07	20,885	70	10,276
2007/08	21,094	70	10,346
2008/09	21,305	72	10,418
2009/10	21,518	72	10,490
2010/11	21,733	72	10,562
2011/12	21,951	74	10,636
2012/13	22,170	73	10,709
2013/14	22,392	74	10,783
2014/15	22,616	76	10,859
2015/16	22,842	76	10,935

Table 2 – Growth Projections for the area covered by Sewerage DSP No. 1.

Year	Population	Number of Equivalent Tenements	Cumulative Number of ET's
2003/04	19,301	8,395	8,395
2004/05	19,494	68	8,463
2005/06	19,689	68	8,531
2006/07	19,886	70	8,601
2007/08	20,085	70	8,671
2008/09	20,286	70	8,741
2009/10	20,488	72	8,813
2010/11	20,693	72	8,885
2011/12	20,900	73	8,958
2012/13	21,109	73	9,031
2013/14	21,320	75	9,106
2014/15	21,534	74	9,180
2015/16	21,749	75	9,255

5.2 Land Use Information

This DSP should be read in conjunction with Armidale Dumaresq Local Environmental Plan.

6. WATER SUPPLY AND SEWERAGE INFRASTRUCTURE

The existing water supply headworks serving the area covered by this DSP include Malpas Dam, Malpas Pumping Station, Malpas Raw Water Pipeline, Puddledock Dam, Puddledock Pumping Station, Puddledock Raw Water Pipeline, Gara Dam, Gara Pumping Station, Gara Raw Water Pipeline, Armidale Water Treatment Plant, and Armidale Clear Water Reservoirs.

The existing water supply headworks and distribution works serving the area covered by this DSP are shown on Plan 1a at page 23 and 1b at page 24.

The proposed water supply distribution works serving the area covered by this DSP are shown on Plans 3a, 4a, 5a, 6a, and 7a at pages 26-30.

The existing and proposed sewerage major works serving the area covered by this DSP include the Armidale Wastewater Treatment Plant, the Armidale Trunk Main (WWTP to UNE), a number of Collector Mains consisting of all pipes 225 mm diameter and greater and Acacia Park Sewer Pumping Station and Rising Main.

The proposed sewerage non-reticulation works serving the area covered by this DSP are shown on Plans 3b, 4b, 5b, 6b, and 7b at pages 26-30.

6.1 Estimates of Capital Costs

The estimated capital cost of existing pre-1996 works serving the area covered by this DSP has been calculated in current day 2005/06 \$ using MEERA replacement valuations from *NSW Reference Rates Manual* published by the NSW Ministry of Energy and Utilities. The capital costs of post-1996 works shown on Plans 3a, 4a, 5a, 6a, and 7a at pages 26-30 for water supply and 3b, 4b, 5b, 6b, and 7b at pages 26-30 for sewerage as required to service the identified development areas have been calculated as shown in the listed reference documents in section 11 at page 17 in current day 2005/06 \$ using reference rates from *NSW Reference Rates Manual* with adjustment for local conditions.

6.2 Timing of Works and Expenditure

The demand for and the timing of construction of new infrastructure is essentially developer driven. To facilitate preparation of this Plan and in association with the new Armidale Dumaresq Local Environmental Plan, a possible program of works over the next 5 years has been estimated for and included in the calculations to determine the developer charges. However, in practice, the actual program could vary somewhat depending on developer demand.

Council's estimated timing and expenditures for works serving the areas covered by this DSP used in the calculation of charges are shown in section 10.2 at pages 11-13. As the charges are averaged over the DSP area and the 5 year life of the Plan and costs to service individual

areas are similar, the actual sequence of construction and the timing of the works is not of concern and will not affect the determined charges.

7. STANDARDS OF SERVICE

System design and operation are based on providing the following standards of service.

7.1 Water Supply

- Treated water to 1996 NHMRC/ARMCANZ *Australian Drinking Water Guidelines* 98% of the time.
- Minimum water pressure of 28 metres at the property boundary while providing a fire fighting flow of 11, 15, or 22 L/s for different classes of buildings as specified in Council's *Engineering Code*, and while maintaining a simultaneous residential peak supply of 0.1 L/s/tenement.

The peak residential allowance may be increased in accordance with Appendix 4 of *Affordable Water Supply & Sewerage for Small Communities* by Water Services Association of Australia for subdivisions serving less than 300 ET's.

- Water quality complaints less than 10 per 1,000 connected properties per annum.
- Unplanned interruptions to supply kept to a minimum (usually 1 - 4 hours) through incident management control. Nil unplanned interruptions greater than 6 hours.
- Domestic customers receive a minimum of 48 hours written notice for planned interruptions to supply. The timing and duration of planned interruptions to commercial or industrial supplies will be at least as for domestic premises and will be negotiated with business owners. Nil programmed interruptions greater than 12 hours.
- Water usage restrictions will be in accordance with Council's Drought Management Plan. Restrictions have not been required since the construction of Malpas Dam in 1968. Restrictions are currently considered to be necessary only in very rare emergency breakdown situations.
- Council does not permit new connections to raw water pipelines.

7.2 Sewerage

- Sewage effluent meeting Environment Protection Authority 90 Percentile Licence Limits (BOD, Oil and Grease, Total SS, Total N, Total P). Actual licence limits and other details are available on the EPA POEA Public Register.
- Odour complaints less than 1 per 1,000 connected properties per annum.
- All blockage and surcharge notifications are investigated and evaluated for level of response under Council's incident management control protocols. Unless immediate action is not warranted, repairs are initiated within 1 hour of receipt of notification.
- Sewer overflows to the environment less than 5 per 100 km of mains per year.
- Sewer connections are completed within 10 days of customer instruction to install (payment) for routine jobs and within 30 days for more complex work.

8. DESIGN PARAMETERS

8.1 Water Supply

Investigation and design of water supply system components are based upon the *Water Supply Investigation Manual (1986)* prepared by NSW Public Works and now managed by the Department of Energy, Utilities and Sustainability and Council's *Engineering Code (1994)*.

In 1994 Montgomery Watson in association with University of New England were appointed by Council to undertake a development strategy study in relation to Armidale's water supply and sewerage systems. Their report *Water Supply and Sewerage Development Strategy Study Final Report November 1995* provides significant direction for the development of the studied systems and thus this Development Servicing Plan.

Care is exercised in the application of the provisions in the Montgomery Watson report as there have been some significant recent alterations to the underlying premises used in the study.

Other engineering documents that impact upon and give direction to this Development Servicing Plan and the system components within it include:

- *Armidale Dumaresq Council Water Supply Strategic Business Plan.*
- The current LEP titled *Armidale Dumaresq Plan.*
- *Armidale Dumaresq Council Policy No. POL039-Utilities Water Supply.*
- *Armidale Dumaresq Council Policy No. POL047-Utilities Policy for the Financing of Water Supply and Sewerage Infrastructure.*
- *Armidale Dumaresq Council Policy No. POL136-Utilities Backflow and Cross Connection Prevention Guidelines.*

8.2 Sewerage

Investigation and design of sewerage system components are based upon the *Manual of Practice: Sewer Design (1984)* and *Manual of Practice: Sewage Pumping Station Design (1986)* prepared by NSW Public Works and now managed by the Department of Energy, Utilities and Sustainability and Council's *Engineering Code (1994)*.

In 1994 Montgomery Watson in association with University of New England were appointed by Council to undertake a development strategy study in relation to Armidale's water supply and sewerage systems. Their report *Water Supply and Sewerage Development Strategy Study Final Report November 1995* provides significant direction for the development of the studied systems and thus this Development Servicing Plan.

Care is exercised in the application of the provisions in the Montgomery Watson report as there have been some significant recent alterations to the underlying premises used in the study.

Other engineering documents that impact upon and give direction to this Development Servicing Plan and the system components within it include:

- *Armidale Dumaresq Council Sewerage Strategic Business Plan.*
- *The current LEP titled Armidale Dumaresq Plan.*
- *Armidale Dumaresq Council Policy No. POL045-Utilities Liquid Trade Waste Policy.*
- *Armidale Dumaresq Council Policy No. POL046-Utilities Liquid Trade Waste Pricing Policy.*
- *Armidale Dumaresq Council Policy No. POL047-Utilities Policy for the Financing of Water Supply and Sewerage Infrastructure.*

9. DEVELOPER CHARGES

The Developer Charges are charges levied on developers to recover part of the capital cost incurred in providing headworks and distribution infrastructure to new development.

The Developer Charge consists of two separate components within the single calculated charge. These two separate components are identifiable as follows:

- Existing Works Component which includes a weighted average charge per ET for the portion of existing excess capacity (or future excess capacity if based upon works already scheduled for future construction by Council) within the distribution system that is being used to supply the new development.
- New Works Component which includes a weighted average charge per ET for the new works identified in the DSP as being required to service new development within the specified Development Area.

10. CALCULATED DEVELOPER CHARGES

10.1 Summary

The developer charges for the area covered by this DSP are as follows:

	Capital Charge (\$ per ET)	Reduction Amount (\$ per ET)	Calculated Developer Charge (\$ per ET)	Adopted Developer Charge (\$ per ET)
Water Supply	\$6,268	\$1,751	\$4,520	60% of Full Developer Charge from 1 January 2007 to 30 June 2007. 80% of Full Developer Charge from 1 July 2007 to 30 June 2008. 100% of Full Developer Charge from 1 July 2008.
Sewerage	\$6,722	\$2,661	\$4,060	

These amounts have been calculated based on the following capital charges and reduction amounts.

10.2 Capital Charge

The capital charges for the area covered by this DSP have been calculated as shown below. The ET's for the system components are related to the component design capacity based upon ability to supply water usage, **not** revenue from annual rates and charges as used with NPV calculations. There are several non-interchangeable ET equivalences used in water supply and sewerage that vary dependent upon the parameter being considered.

The Post-1996 Works included in the tabulation and the assumed construction timing are indicative of the works that might be undertaken to service new developments. A few items have already been constructed and include actual costs. The details of the other works have been obtained from preliminary investigation undertaken in conjunction with enquiries from prospective developers. The list will be updated with actual historic construction data in future reviews of the DSP.

Although the Water Treatment Plant Ozone BAC plant upgrade has been included at the end of the tabulation below it was excluded from the calculations of the Developer Charge.

Water Supply

Component	Year Commissioned	Effective Year of Commissioning for ROI	Capital Cost in 2005/06 \$	Capacity in Current Day Equivalent Residential Usage ET	Capital Cost per ET in 2005/06 \$	Year When Capacity is Taken Up	Take-Up period in Years	Return on Investment Factor 3% pre 1996 or 7% post 1996	Capital Charge per ET in 2005/06 \$
									1.0%/a Growth
	(1)	(2)	(3)	(4)	(5)=(3)/(4)	(6)	(7)=(6)-(2)+1	(8)	(9)=(5)*(8)
Pre-1996 Works									
Malpas Dam	1968	1996	\$11,800,438	24,236	\$487	2038	43	1.74	\$848
Malpas Pipeline	1968	1996	\$19,822,659	13,609	\$1,457	2020	25	1.39	\$2,030
Malpas Booster (Civil & Mech/Elect)	1968	1996	\$732,227	13,609	\$54	2020	25	1.39	\$75
Water Treatment Plant (Civil)	1968	1996	\$8,475,489	23,948	\$354	2038	43	1.74	\$616
Water Treatment Plant (Mech/Elect)	1987	1996	\$5,650,326	23,948	\$236	2038	43	1.74	\$411
									Total
									\$3,980
Water Treatment Plant (Reservoirs)	1939	1996	\$2,056,626	7,549	\$272	2005	10	1.14	\$310
Drummond Park Reservoir	1985	1996	\$992,640	5,111	\$194	2005	10	1.14	\$221
Garibaldi St Reservoir	1968	1996	\$625,080	1,679	\$372	2005	10	1.14	\$424
Northern High Reservoir	1977	1996	\$1,085,700	3,651	\$297	2020	25	1.39	\$415
Southern High Reservoir	1977	1996	\$1,085,700	3,651	\$297	2020	25	1.39	\$415
			\$5,845,746	21,640	\$270			Weighted Average	\$333
WTP Pump Station (Civil)	1986	1996	\$106,641	10823	\$10	2020	25	1.39	\$14
Cross Town Pumps (60 kW Mech/Elect) & NHL Pumps (90 kW Mech/Elect)	1986	1996	\$192,774	10823	\$18	2020	25	1.39	\$25
Cross Town Main (5,800 m of 450 mm CLS)	1972	1996	\$3,883,448	7955	\$488	2020	25	1.39	\$680
NHL Main (1,400 m of 225 mm AC)	1963	1996	\$364,658	2868	\$127	2020	25	1.39	\$177
SHL Pump Station (Civil)	1968	1996	\$121,407	4118	\$29	2020	25	1.39	\$41
SHL Pumps (180 kW Mech/Elect)	1968	1996	\$214,923	4118	\$52	2020	25	1.39	\$73
SHL Main (1,500 m of 300 mm AC)	1972	1996	\$582,435	4118	\$141	2020	25	1.39	\$197
			\$5,466,285	14941	\$366			Weighted Average	\$510
								Weighted Total	\$4,823
Post-1996 Works - Indicative only of Works that might be undertaken to service new developments									
Acacia Park Industrial Development Requirements	2004	2004	\$845,000	1170	\$722	2020	17	1.63	\$1,175
Cookes Rd Development Requirements (485 m of 150 mm OPVC to CW1)	2005	2005	\$90,688	95	\$955	2014	10	1.33	\$1,270
Rockvale Rd Development Requirements (220 m of 150 mm OPVC to CW2)	2005	2005	\$41,137	148	\$278	2014	10	1.33	\$370
Airport Industrial Development Requirements (4000 m of 250 mm OPVC and 135 kW Var Speed PS)	2005	2005	\$1,643,962	1098	\$1,497	2021	17	1.63	\$2,436
Link Rd Development Requirements (670 m of 200 mm OPVC to NH1)	2006	2006	\$170,572	695	\$245	2015	10	1.33	\$327
Airport Industrial Development Requirements (1,6210 m of 200 mm OPVC and 400 m of 150 mm OPVC)	2007	2007	\$487,222	1038	\$469	2011	5	1.14	\$535
Link Rd Development Requirements (320 m of 200 mm OPVC to NH5)	2007	2007	\$81,467	368	\$221	2011	5	1.14	\$252
Airport Industrial Development Requirements (480 m of 100 mm OPVC to RR8)	2014	2014	\$62,354	54	\$1,155	2015	2	1.03	\$1,194
				3574				Weighted Average	\$1,445
								Weighted Total	\$6,268
Note: Only those ET's shaded blue are used to calculate the weighted average.									
WTP Ozonation	2006	2006	\$4,761,624	16,427	\$290	2008	3	1.07	\$310
								Weighted Total with Ozonation	\$6,578

Sewerage

Component	Year Commissioned	Effective Year of Commissioning for ROI	Capital Cost (2005/06) in \$	Capacity in ET	Capital Cost per ET in 2005/06 \$	Year When Capacity is Taken Up	Take-Up period in Years	Return on Investment Factor 3% pre 1996 or 7% post 1996	Capital Charge per ET in 2005/06 \$ 1.0%/a Growth
	(1)	(2)	(3)	(4)	(5)=(3)/(4)	(6)	(7)=(6)-(2)+1	(8)	(9)=(5)*8
Pre-1996 Works									
Sewer Treatment Plant	1980	1996	\$11,529,100	8,000	\$1,441	2005	10	1.14	\$1,640
Carrier Mains	1977	1996	\$16,139,131	17,000	\$949	2021	26	1.41	\$1,341
								Total	\$2,981
Post-1996 Works - Indicative only of Works that might be undertaken to service new developments									
Cookes Rd Development Requirements (560 m of 150 mm Carrier Main to CW1)	2005	2005	\$109,200	95	\$1,149	2014	10	1.33	\$1,530
Rockvale Rd Development Requirements to CW2	2005	2005	\$0	148	\$0	2014	10	1.33	\$0
Airport Industrial Development Requirements (2336 m of 150 mm Reticulation and Pumping Mains, 1300 m of 150 mm Carrier main, and 59 L/s to 80 m head PS to ID2)	2006	2006	\$1,479,500	423	\$3,498	2021	16	1.58	\$5,536
Link Rd Development Requirements to NH1	2006	2006	\$0	289	\$0	2015	10	1.33	\$0
Acacia Park Industrial Development Requirements (355 m of 225 mm Carrier and Pumping Mains, and relocated 30 L/s to 50 m head PS to ID1 and RR1)	2006	2006	\$412,650	549	\$752	2020	15	1.54	\$1,157
Airport Industrial Development Requirements to ID3	2008	2008	\$0	0	\$0	2021	14	1.50	\$0
Link Rd Development Requirements to NH5	2008	2008	\$0	153	\$0	2021	14	1.50	\$0
Airport Industrial Development Requirements (520 m of 150 mm Reticulation to RR4)	2009	2009	\$116,464	7	\$16,638	2022	14	1.50	\$24,892
Airport Industrial Development Requirements (1,135 m of 150 mm Reticulation to RR6)	2011	2011	\$263,320	19	\$13,859	2023	13	1.45	\$20,147
Airport Industrial Development Requirements (983 m of 150 mm Reticulation to RR7)	2014	2014	\$228,056	3	\$76,019	2024	11	1.37	\$104,218
				1067				Weighted Average	\$3,741
Note: Only those ET's shaded blue are used to calculate the weighted average.								Weighted Total	\$6,722
Note: The capacities in ET's have not been updated. Standard allowances for waste to sewers have probably not been greatly affected by demand management.									

10.3 Reduction Amount

Council has adopted the NPV of Annual Charges method to calculate the Reduction Amount which is similar to IPART's method for the regulated utilities and which will be required by the Department of Energy, Utilities and Sustainability to be used before the second round of DSP's in 2007-09 period.

The Reduction Amount has been calculated for the whole of the Armidale Development Area. Operation and maintenance costs for Armidale cannot be dissected to cover separate sub-areas. It is assumed that operation and maintenance costs are similar for all areas and hence there will be no adjustment to the reduction amount.

The method used involves calculation of the PV of the difference between annual rates and charges revenue, and annual operating costs projected for new development over the next 30 years. This is divided by the PV of the new ET's over the planning horizon to give the reduction amount.

The method involves 30-year forecasting of income and expenditures relating to new development.

The reduction amounts have been calculated as follows:

Water Supply

Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	...	2034/35
Weighted Average Capital Charge in \$ (1)	6,268	6,268	6,268	6,268	6,268	6,268	...	6,268
Input Reduction Amount in \$ (2)	1,754	1,754	1,754	1,754	1,754	1,754	...	1,754
Average Developer Charge in \$ (3)=(1)-(2)	4,520	4,520	4,520	4,520	4,520	4,520	...	4,520
Total Equivalent Tenements in ETs (4)	10,206	10,276	10,346	10,418	10,490	10,490	...	11,648
New ETs per year (5)	70	70	71	72	72	73	...	83
PV of New ETs (6)=PV of (5) over 30 years @ 7%	1001	1,008	1,015	1,022	1,029	1,036	...	1,096
Cumulative New ETs (7)	70	140	210	282	353	426	...	2,338
Rates and charges revenue in \$'000 (8)	5,094	5,111	5,119	4,936	4,979	5,032	...	6,140
OMA cost in \$'000 (9)	3,002	3,031	3,061	3,091	3,120	3,149	...	3,937
Revenue - OMA in \$'000 (10)=(8)-(9)	2,092	2,080	2,058	1,845	1,859	1,883	...	2,203
Revenue - OMA for New ETs (11)	14	29	42	50	63	76	...	442
NPV (Revenue - OMA) in \$'000 (12)=PV of (11) over 30 years @ 7%	1,909	1,837	1,764	1,688	1,685	1,613	...	-5,128
Output Reduction Amount in \$ per ET (13)=(12)/(6)	1,907	1,823	1,737	1,651	1,637	1,557	...	-4,680

Note: Full copies of the calculation sheets from the NPV Annual Charges Calculation Software are included in Appendix A at page 36-37 for water supply and page 39-40 for sewerage.

Sewerage

Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	...	2034/35
Weighted Average Capital Charge in \$ (1)	6,722	6,722	6,722	6,722	6,722	6,722	...	6,722
Input Reduction Amount in \$ (2)	2,661	2,661	2,661	2,661	2,661	2,661	...	2,661
Average Developer Charge in \$ (3)=(1)-(2)	4,060	4,060	4,060	4,060	4,060	4,060	...	4,060
Total Equivalent Tenements in ETs (4)	8,531	8,601	8,671	8,741	8,813	8,885	...	9,966
New ETs per year (5)	69	69	70	70	71	72	...	82
PV of New ETs (6)=PV of (5) over 30 years @ 7%	995	1,003	1,010	1,017	1,024	1,031	...	1,092
Cumulative New ETs (7)	69	138	208	279	350	423	...	2,326
Rates and charges revenue in \$'000 (8)	4,588	4,692	4,755	4,822	4,872	4,935	...	5,741
OMA cost in \$'000 (9)	2,346	2,370	2,390	2,411	2,437	2,458	...	3,077
Revenue - OMA in \$'000 (10)=(8)-(9)	2,242	2,322	2,365	2,411	2,435	2,477	...	2,664
Revenue - OMA for New ETs (11)	18	37	57	77	97	118	...	622
NPV (Revenue - OMA) in \$'000 (12)=PV of (11) over 30 years @ 7%	2,845	2,786	2,702	2,605	2,491	2,370	...	-7,329
Output Reduction Amount in \$ per ET (13)=(12)/(6)	2,860	2,778	2,675	2,561	2,432	2,298	...	-6,713

10.4 Reviewing / Updating of Calculated Developer Charges

Developer charges relating to this DSP will be reviewed after a period of 5 to 6 years.

In the period between any reviews, developer charges will be adjusted on 1 July each year based on movements in the CPI for Sydney in the preceding 12 months to December, excluding the impact of GST.

10.5 Reticulation Works

The developer shall be responsible for the full cost of the design and construction of water supply and sewerage reticulation works within subdivisions. This is termed dedicated infrastructure (dedicated to the servicing of the development).

10.6 Cross-subsidy

Council may decide to subsidise the developer charges by imposing lower charges than those which has been calculated as the real cost to the water supply and sewerage utilities of providing services to the proposed development to encourage development. Reduction of the developer charges will thus result in insufficient funding being obtained from the developer to cover the real cost of providing the services to the development. The funding shortfall would have to be covered by increased access and/or usage charges. This would automatically establish a cross-subsidy of the development by existing ratepayers.

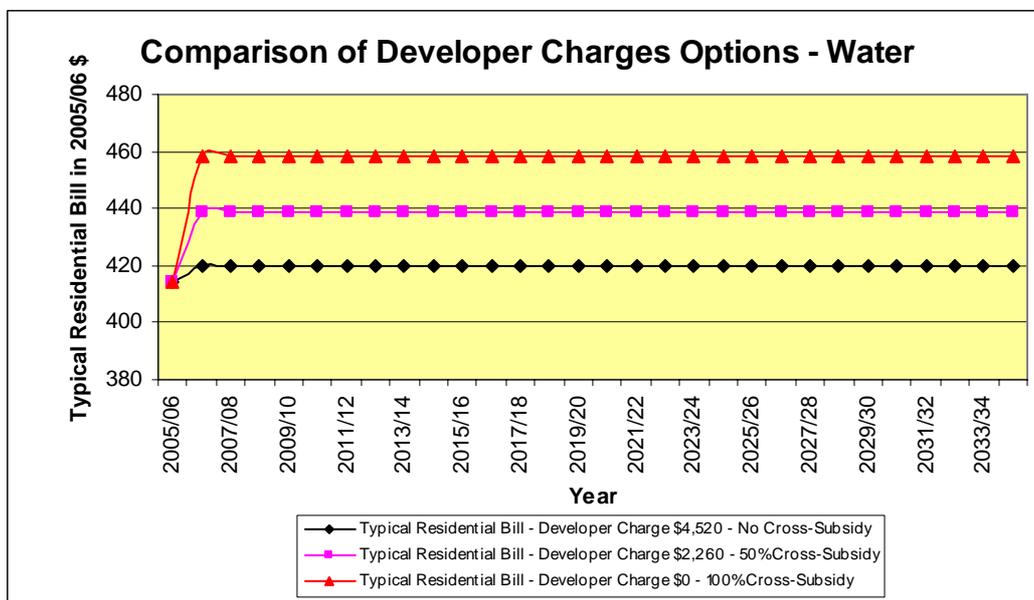
The Council of Australian Governments, NSW Government, and the NSW Independent Pricing and Regulatory Tribunal require that such cross-subsidy be disclosed and declared in the Development Servicing Plan, Council Annual Report, Special Schedules No. 3 and 5 of Council's Annual Financial Statements, and in communication materials for consultation with stakeholders.

The following tabulations set out the consequent cross-subsidy associated with different levels of reduced Developer Charges assuming the development rate remains constant at 1% per annum and the cross-subsidy continues over 30 years (the utilities planning horizon). If the development rate increases due to the subsidy then the values in columns 5, 6, 7, and 8 will increase significantly. The consequences of this effect have not been assessed.

	1	2	3	4	5	6	7		8
	Adopted Developer Charge Reduction in %	Developer Charge in \$/ET	Cross-Subsidy to New Development in \$/ET	Required Typical Residential Bill in \$/Assessment	Cross-Subsidy from Typical Resident Bills in \$/Assessment	Resulting increase in Typical Residential Bills in %	Resulting Cross-Subsidy		
							Total over 30 years in \$M	Average Subsidy Each Year in \$	
Water Supply	0%	\$4,520	\$0	\$420	\$0	0.0%	\$0M	\$0	
	10%	\$4,068	\$452	\$424	\$4	1.0%	\$1.1M	\$37,000	
	20%	\$3,616	\$904	\$428	\$8	1.9%	\$2.3M	\$77,000	
	25%	\$3,390	\$1,130	\$430	\$10	2.4%	\$2.8M	\$93,000	
	30%	\$3,164	\$1,356	\$431	\$11	2.6%	\$3.4M	\$113,000	
	40%	\$2,712	\$1,808	\$435	\$15	3.6%	\$4.5M	\$150,000	
	50%	\$2,260	\$2,260	\$439	\$19	4.5%	\$5.7M	\$190,000	
	60%	\$1,808	\$2,712	\$443	\$23	5.5%	\$6.8M	\$227,000	
	70%	\$1,356	\$3,164	\$447	\$27	6.4%	\$7.9M	\$263,000	
	75%	\$1,130	\$3,390	\$449	\$29	6.9%	\$8.5M	\$283,000	
	80%	\$904	\$3,616	\$450	\$30	7.1%	\$9.M	\$300,000	
	90%	\$452	\$4,068	\$454	\$34	8.1%	\$10.2M	\$340,000	
100%	\$0	\$4,520	\$458	\$38	9.0%	\$11.3M	\$377,000		

1		2	3	4	5	6	7		8
Adopted Developer Charge Reduction in %	Developer Charge in \$/ET	Cross-Subsidy to New Development in \$/ET	Required Typical Residential Bill in \$/Assessment	Cross-Subsidy from Typical Resident Bills in \$/Assessment	Resulting increase in Typical Residential Bills in %	Resulting Cross-Subsidy			
						Total over 30 years in \$M	Average Subsidy Each Year in \$		
Sewerage	0%	\$4,060	\$0	\$328	\$0	0.0%	\$0M	\$0	
	10%	\$3,654	\$406	\$331	\$3	0.9%	\$1.1M	\$33,000	
	20%	\$3,248	\$812	\$334	\$6	1.8%	\$1.9M	\$63,000	
	25%	\$3,045	\$1,015	\$335	\$7	2.1%	\$2.4M	\$80,000	
	30%	\$2,842	\$1,218	\$337	\$9	2.7%	\$2.9M	\$97,000	
	40%	\$2,436	\$1,624	\$340	\$12	3.7%	\$3.9M	\$130,000	
	50%	\$2,030	\$2,030	\$343	\$15	4.6%	\$4.9M	\$163,000	
	60%	\$1,624	\$2,436	\$345	\$17	5.2%	\$5.8M	\$193,000	
	70%	\$1,218	\$2,842	\$348	\$20	6.1%	\$6.8M	\$227,000	
	75%	\$1,015	\$3,045	\$350	\$22	6.7%	\$7.3M	\$243,000	
	80%	\$812	\$3,248	\$351	\$23	7.0%	\$7.8M	\$260,000	
	90%	\$406	\$3,654	\$354	\$26	7.9%	\$8.7M	\$290,000	
	100%	\$0	\$4,060	\$357	\$29	8.8%	\$9.7M	\$323,000	

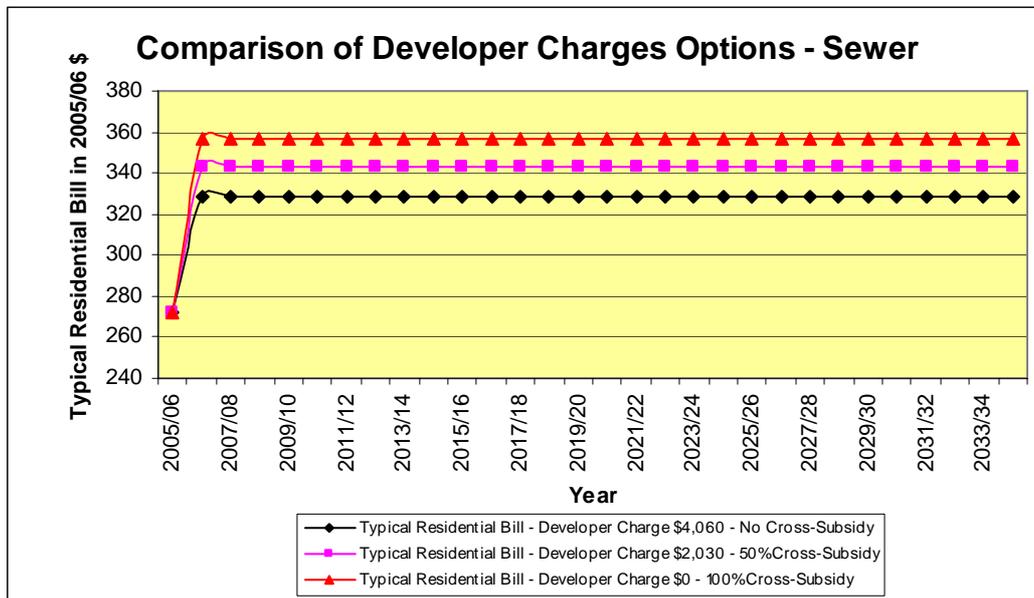
The following graphs illustrate the effect of different degrees of cross-subsidisation on the typical residential water supply and sewerage bills over the 30-year planning period in terms of current 2005/06 \$ assuming the development rate remains constant at 1% per annum and the cross-subsidy continues over 30 years (the utilities planning horizon).



Notes:

- Option 1 involves a Developer Charge of \$4,520/ET with no cross-subsidy.
- Option 2 involves a Developer Charge of \$2,260/ET. This involves an average cross-subsidy of \$2,260/ET requiring an increase of \$19/assessment (4.5%) in each year's typical residential bill. The present worth of this cross-subsidy over 30 years is \$5.7M.

3. Option 3 involves a Developer Charge of \$0/ET. This involves an average cross-subsidy of \$4,520/ET requiring an increase of \$38/assessment (9.0%) in each year's typical residential bill. The present worth of this cross-subsidy over 30 years is \$11.3M.



Notes:

4. Option 1 involves a Developer Charge of \$4,060/ET with no cross-subsidy.
5. Option 2 involves a Developer Charge of \$2,030/ET. This involves an average cross-subsidy of \$2,030/ET requiring an increase of \$15/assessment (4.6%) in each year's typical residential bill. The present worth of this cross-subsidy over 30 years is \$4.9M.
6. Option 3 involves a Developer Charge of \$0/ET. This involves an average cross-subsidy of \$4,060/ET requiring an increase of \$29/assessment (8.8%) in each year's typical residential bill. The present worth of this cross-subsidy over 30 years is \$9.7M.

11. REFERENCE DOCUMENTS

Background information and calculations relating to this DSP are contained in the following documents:

1. *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater (December 2002)* published by NSW Department of Land and Water Conservation.
2. *Independent Pricing and Regulatory Tribunal of NSW Determination – Developer Charges - Determination No.9 (2000)*. This is Attachment 2 to the above Guidelines.
3. *Armidale City Council Water Supply and Sewerage Development Strategy Study Final Report*, November 1995, Montgomery Watson Australia in association with the University of New England.
4. *Armidale Dumaresq Council Water Supply Strategic Business Plan (2003)*.
5. *Armidale Dumaresq Council Sewerage Strategic Business Plan (2003)*.

6. *Population Projections and Demographic Characteristics* by Kathy Martin.
7. *Armidale Maximum Day Raw Water Production* graph, 10 February 2004, Armidale Dumaresq Council. (3rd chart in *Raw Water Production 1993-2002.xls* on worksheet titled *Yearly Trend Raw Water Production*.)
8. *Headworks Capacity Assessment*, 10 October 2003, Armidale Dumaresq Council.
9. *Reservoir Capacity Assessment*, 18 September 2003, Armidale Dumaresq Council.
10. *Status of Current Infrastructure*, 10 October 2003, Armidale Dumaresq Council.
11. *Industrial Development at the Airport*, 11 August 2003, Armidale Dumaresq Council.
12. *Acacia Park Industrial Area Water Supply Investigation*, 17 April 2003, Armidale Dumaresq Council.
13. *Proposed 92 Lot (Min) Subdivision off Cookes Road*, 29 May 2003, Armidale Dumaresq Council.
14. *Possible Future Development Areas*, 21 January 2004, Armidale Dumaresq Council which includes:
 - Future Development Areas.doc
 - North Residential - Water.wmf
 - Northeast Residential - Water.wmf
 - East Residential - Water.wmf
 - Acacia Pk Industrial - Water.wmf
 - Airport Industrial - Water.wmf
 - North Residential - Sewer.wmf
 - Northeast Residential - Sewer.wmf
 - East Residential - Sewer.wmf
 - Acacia Pk Industrial - Sewer.wmf
 - Airport Industrial - Water.wmf
15. *Reservoir Excess Capacity Available for New Development*, 25 February 2004, Armidale Dumaresq Council. (*Development Areas.xls* on worksheet titled *Excess Capacity – 80% Max Day*.)
16. *Development Area Preferred Order of Development*, 25 February 2004, Armidale Dumaresq Council. (*Development Areas.xls* on worksheet titled *Development Area Requirements*.)

These documents contain guidelines and examples, background information including asset commissioning dates, size/length of assets, MEERA valuation of assets, system assessments and planning, business financial modelling, and detailed calculations for the capital charge and reduction amount. These documents can be reviewed in Council's offices by appointment. To review the documents please contact Council's Utilities Manager or Utilities Senior Engineer.

12. OTHER DSPS AND RELATED PLANS

There are no other DSPs and Related Plans applicable to developments within the Armidale city growth area. Developer Charges relating to proposed developments outside the area covered by this DSP will be separately considered at the time of application.

13. GLOSSARY

The definitions of some common terms associated with this Development Servicing Plan are provided below.

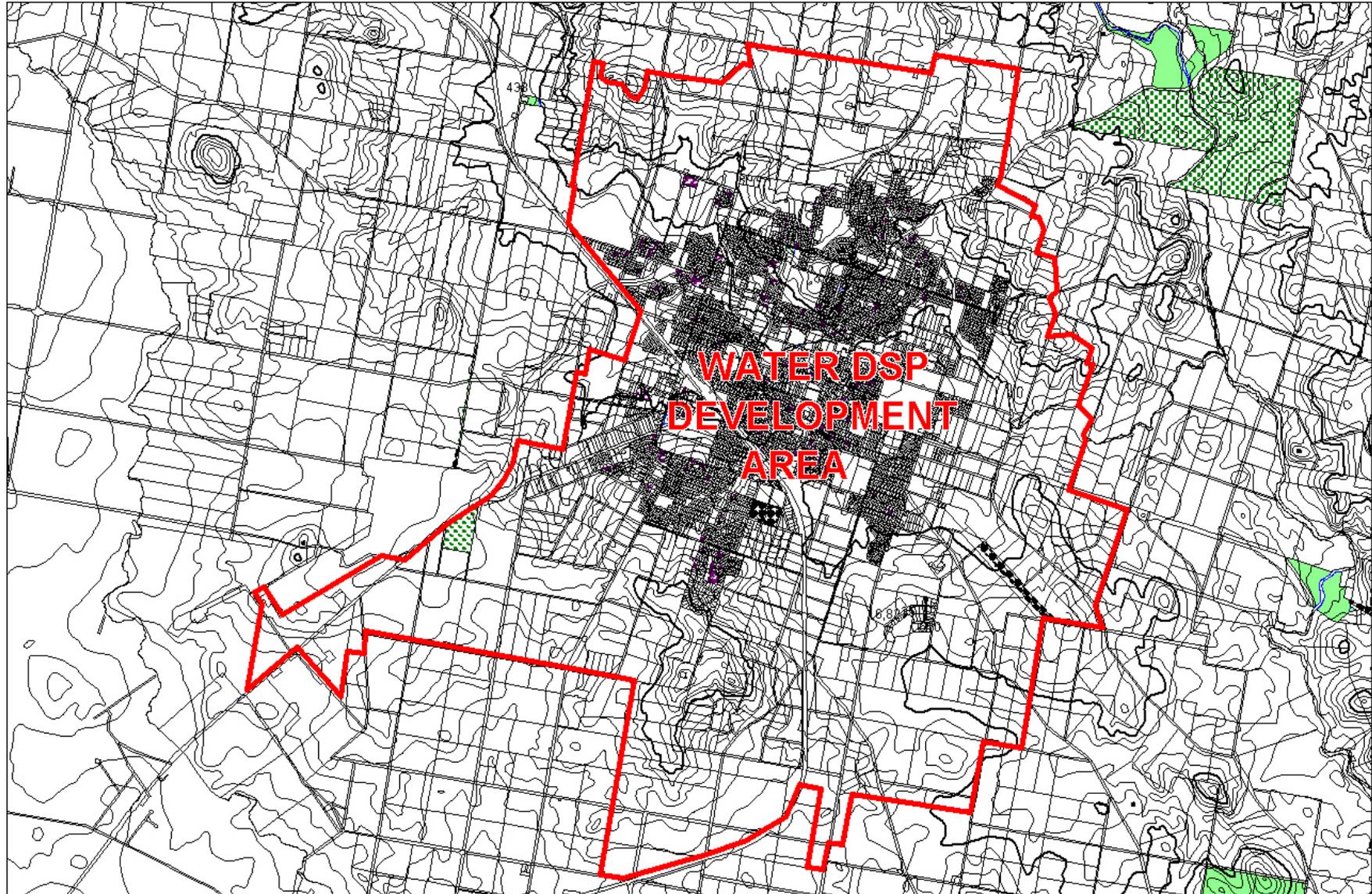
ADWF	Average Dry Weather Flow
Annual Demand	Total annual water consumption
AWWF	Average Wet Weather Flow
BOD	Biochemical oxygen demand. Used as a measure of the "strength" of sewage.
Capital Charge	Capital cost of assets per ET x Return on Investment (ROI) Factor.
Capital Cost	The Present Value (MEERA basis) of assets used to service the development.
CPI	Consumer Price Index
DCP	Development Control Plan
Developer Charge (DC)	A charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development.
Discount Rate	The rate used to calculate the present value of money arising in the future.
DLWC	Department of Land and Water Conservation – now known in part as the Department of Energy, Utilities and Sustainability (DEUS).
DSP	Development Servicing Plan
EP	Equivalent Person
ET	Equivalent Tenement
IPART	Independent Pricing and Regulatory Tribunal
kL/d	Kilolitres per day
LEP	Local Environmental Plan
MEERA	Modern Equivalent Engineering Replacement Asset
ML/d	Megalitres per day
NHMRC	National Health and Medical Research Council
NPV	Net Present Value
OMA	Operation, maintenance and administration (costs)
Peak Day Demand	Highest water consumption on one day in a year

Pre-1996 Asset	An Asset that was commissioned by a water utility before 1 January 1996.
Post 1996 Asset	An Asset that was commissioned by a water utility on or after 1 January 1996 or that is yet to be commissioned.
PS	Pumping Station
PV	Present value. The value now of money, or ET's, in the future.
PWWF	Peak Wet Weather Flow
Real Terms	The value of a variable adjusted for inflation by a CPI adjustment.
Reduction Amount	The amount by which the capital charge is reduced to arrive at the developer charge. This amount reflects the present value of the capital contribution that will be paid by the occupier of a development as part of future annual charges.
ROI	Return on investment. Represents the income that is, or could be, generated by investing money.
Service Area	An area served by a separate water supply system, an area served by a separate sewage treatment works, a separate small town or village, or a new development of over 500 lots.
SR	Service Reservoir
SS	Suspended solids, or the concentration of particles in sewage. Used as a measure of the "strength" of sewage.
STW	Sewage Treatment Works
TRB	Typical residential bill
WTW	Water Treatment Works

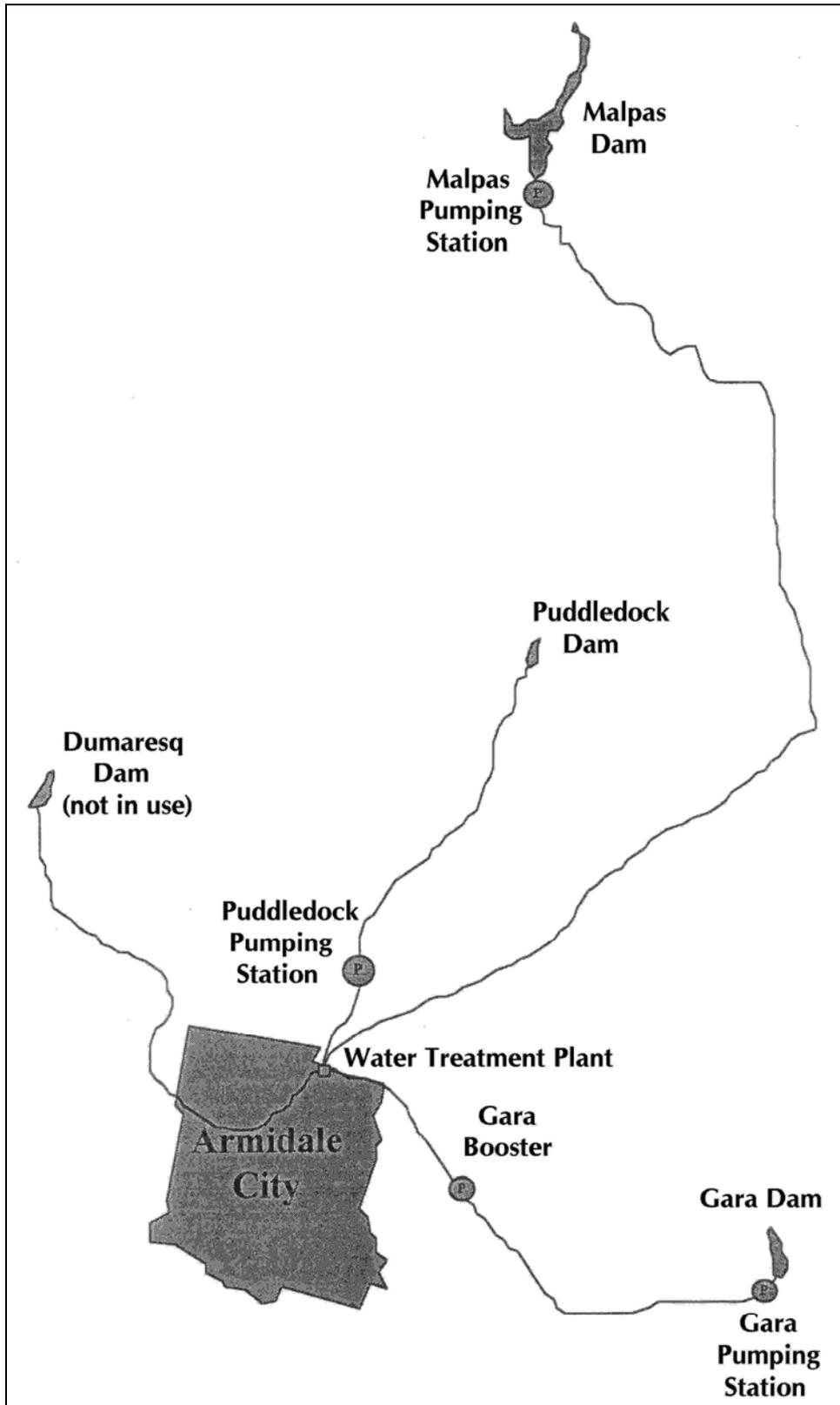
14. PLANS

Plan 1	Area covered by this Water Supply DSP No. 1
Plan 1a	Water Supply Headworks System supplying Armidale City
Plan 1b	Water Supply Distribution System within Armidale City Area
Plan 2	Area covered by this Sewerage DSP No. 1
Plan 3a	Assumed northern development areas and their required water supply infrastructure
Plan 3b	Assumed northern development areas and their required sewerage infrastructure
Plan 4a	Assumed northeastern development areas and their required water supply infrastructure
Plan 4b	Assumed northeastern development areas and their required sewerage infrastructure
Plan 5a	Assumed eastern development areas and their required water supply infrastructure

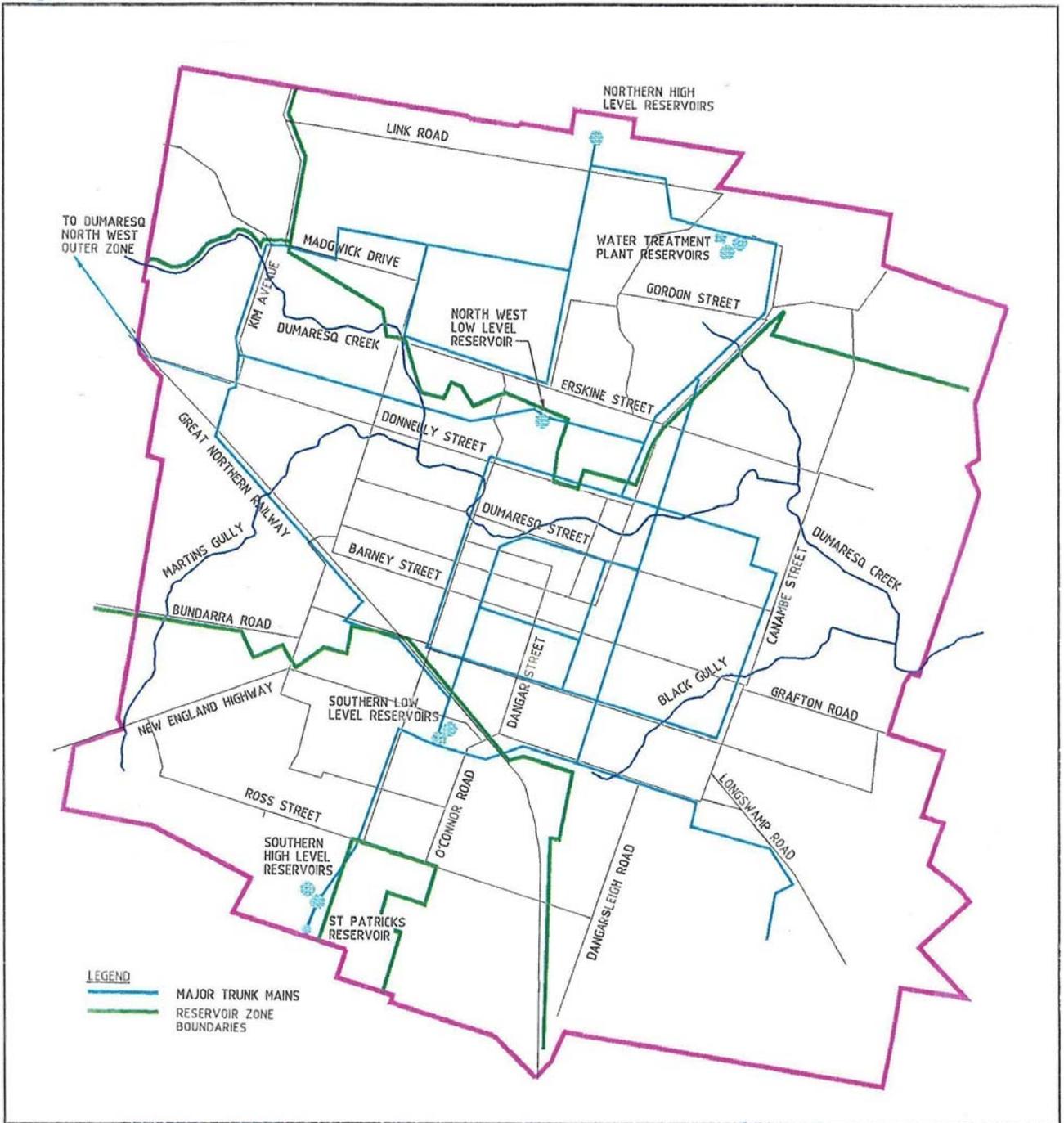
Plan 5b	Assumed eastern development areas and their required sewerage infrastructure
Plan 6a	Assumed Acacia Park development areas and their required water supply infrastructure
Plan 6b	Assumed Acacia Park development areas and their required sewerage infrastructure
Plan 7a	Assumed Airport development areas and their required water supply infrastructure
Plan 7b	Assumed Airport development areas and their required sewerage infrastructure



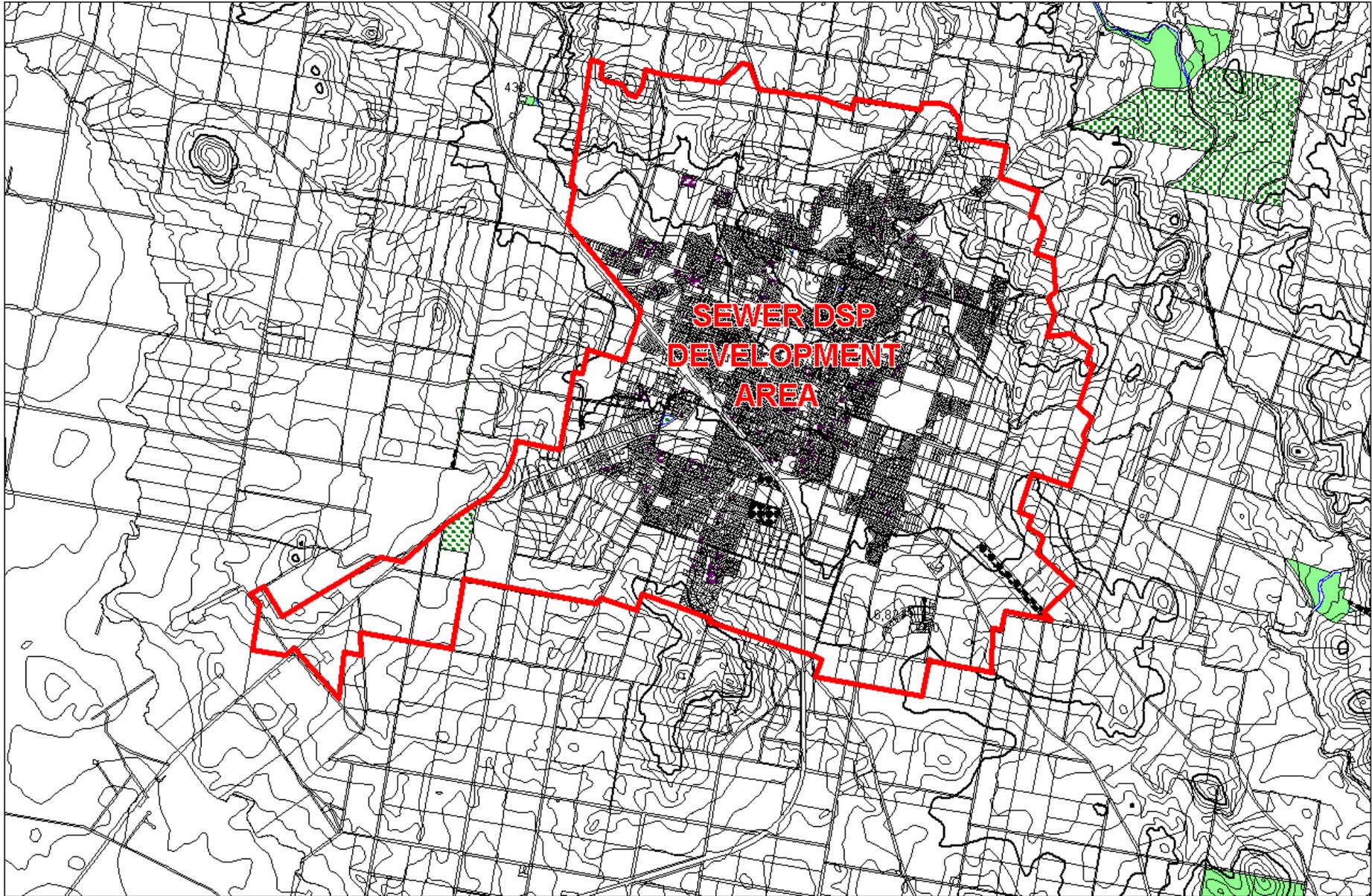
Plan 1 – Area covered by this Water Supply DSP No. 1



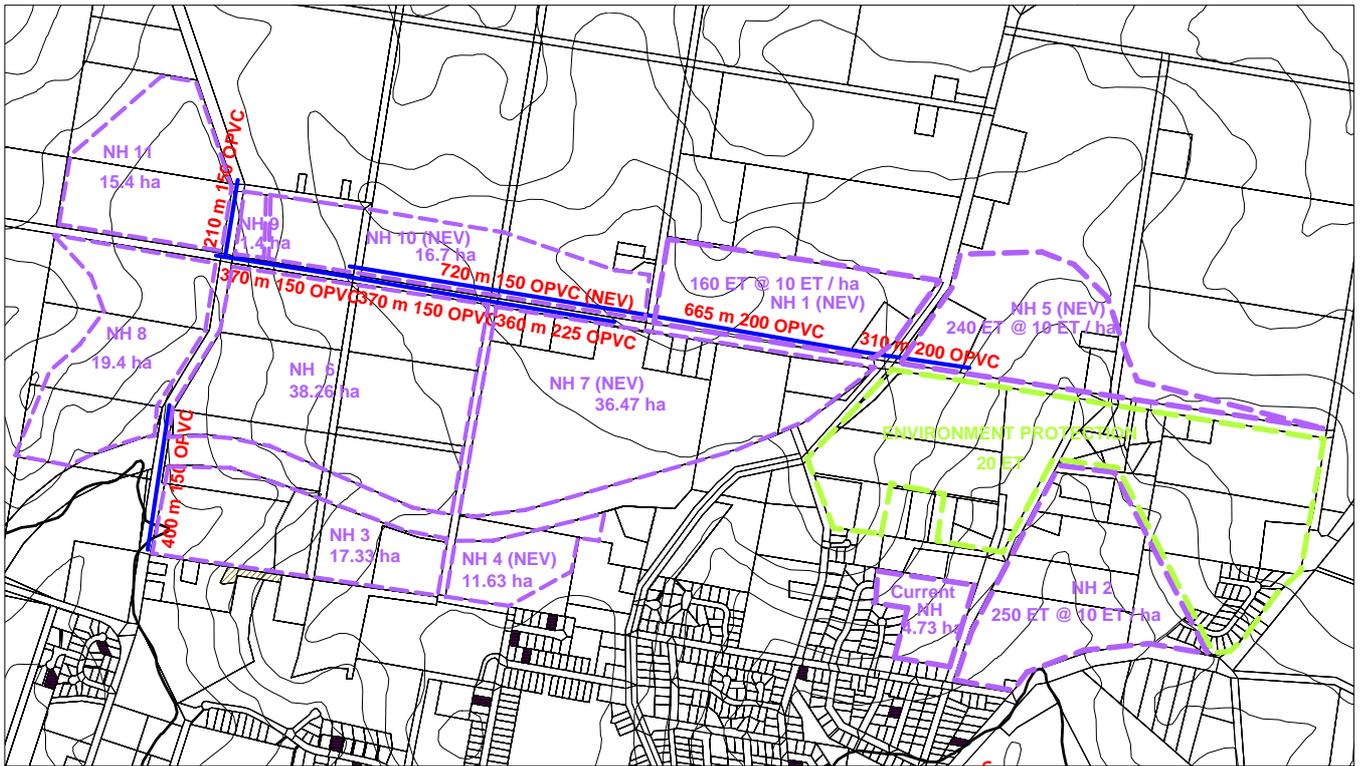
Plan 1(a) – Water Supply Headworks System supplying Armidale City



Plan 1(b) – Water Supply Distribution System within Armidale City Area



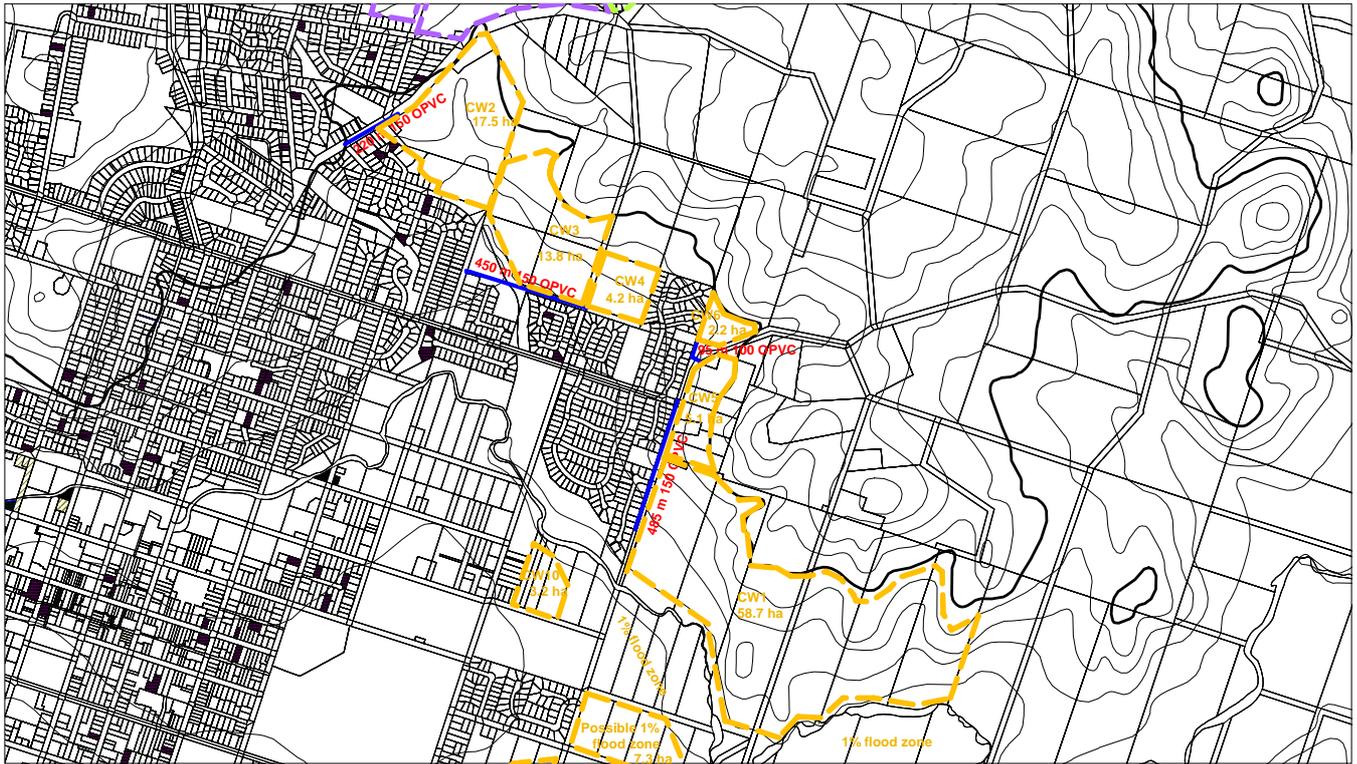
Plan 2 – Area covered by this Sewerage DSP No. 1



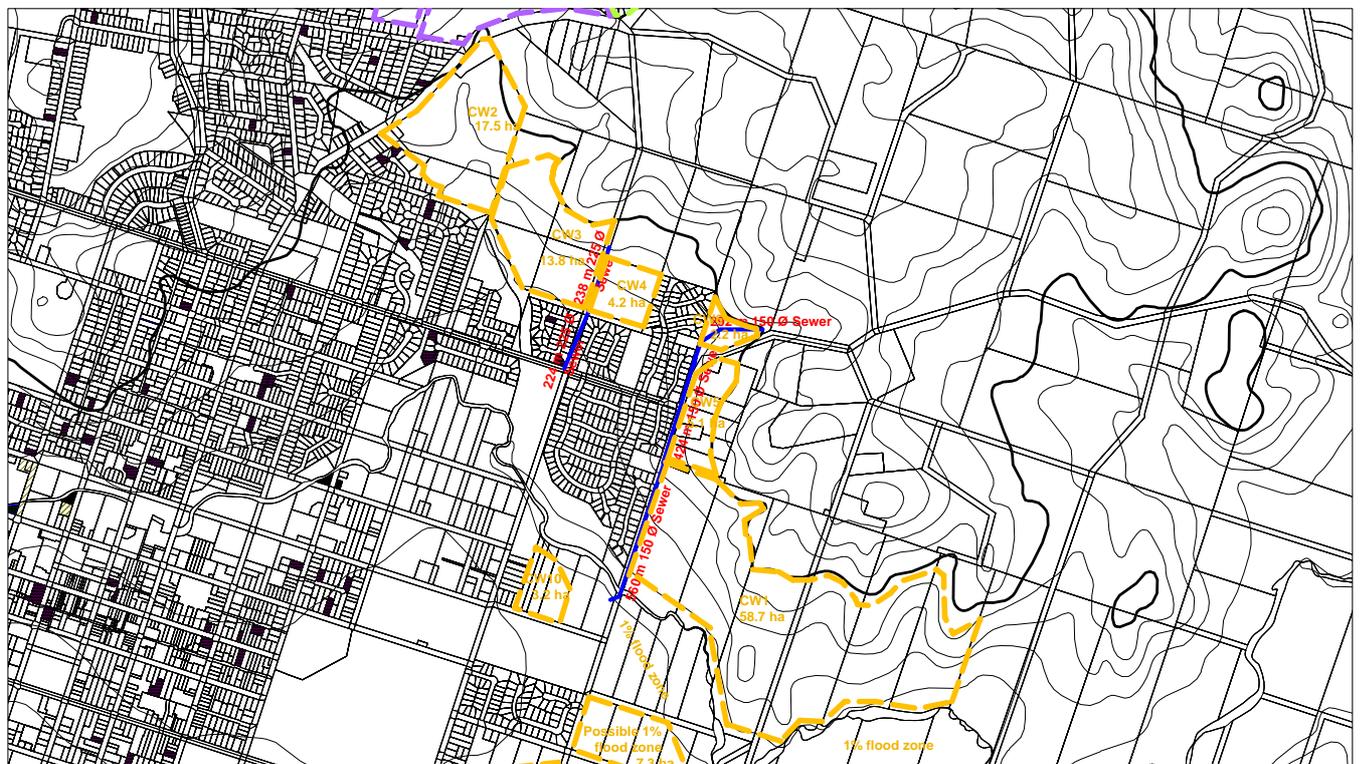
Plan 3a – Assumed northern development areas and their required water supply infrastructure



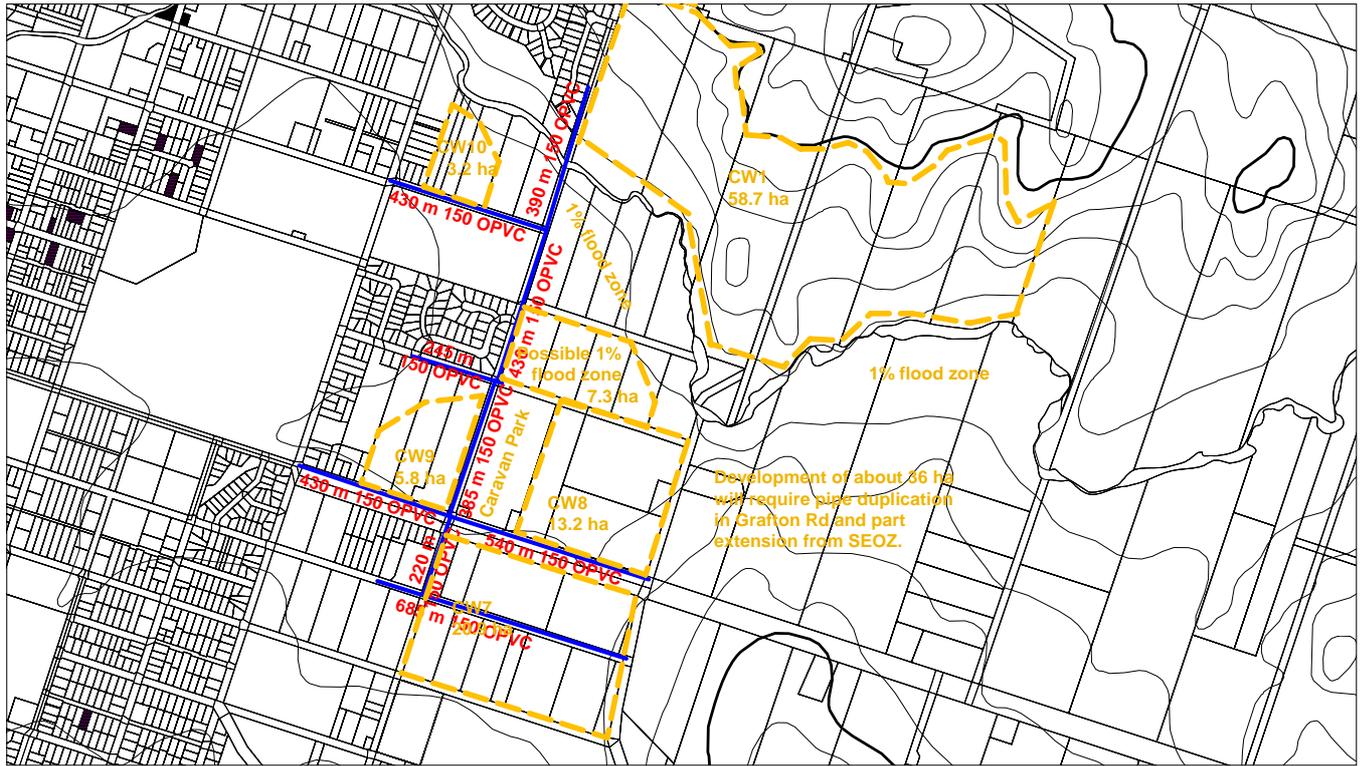
Plan 3b – Assumed northern development areas and their required sewerage infrastructure



Plan 4a – Assumed northeastern development areas and their required water supply infrastructure



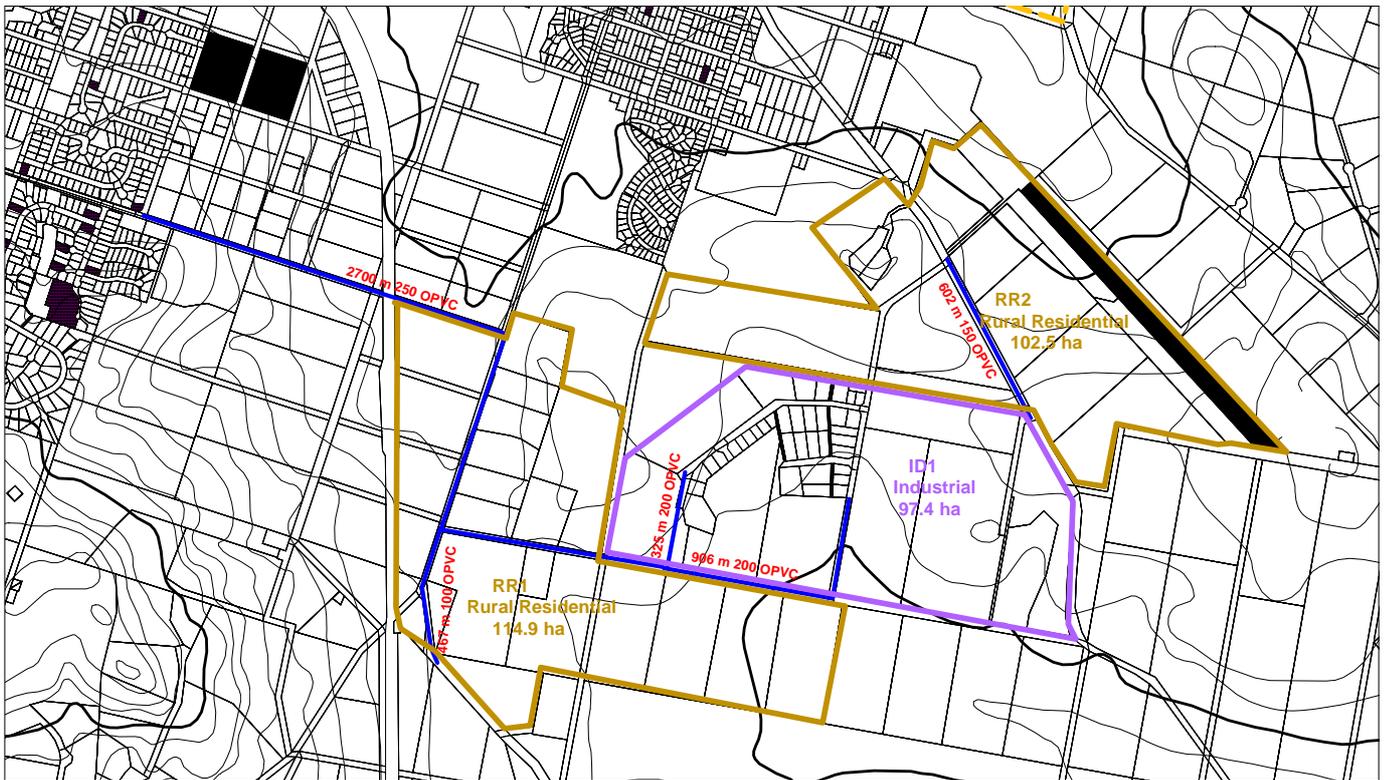
Plan 4b – Assumed northeastern development areas and their required sewerage infrastructure



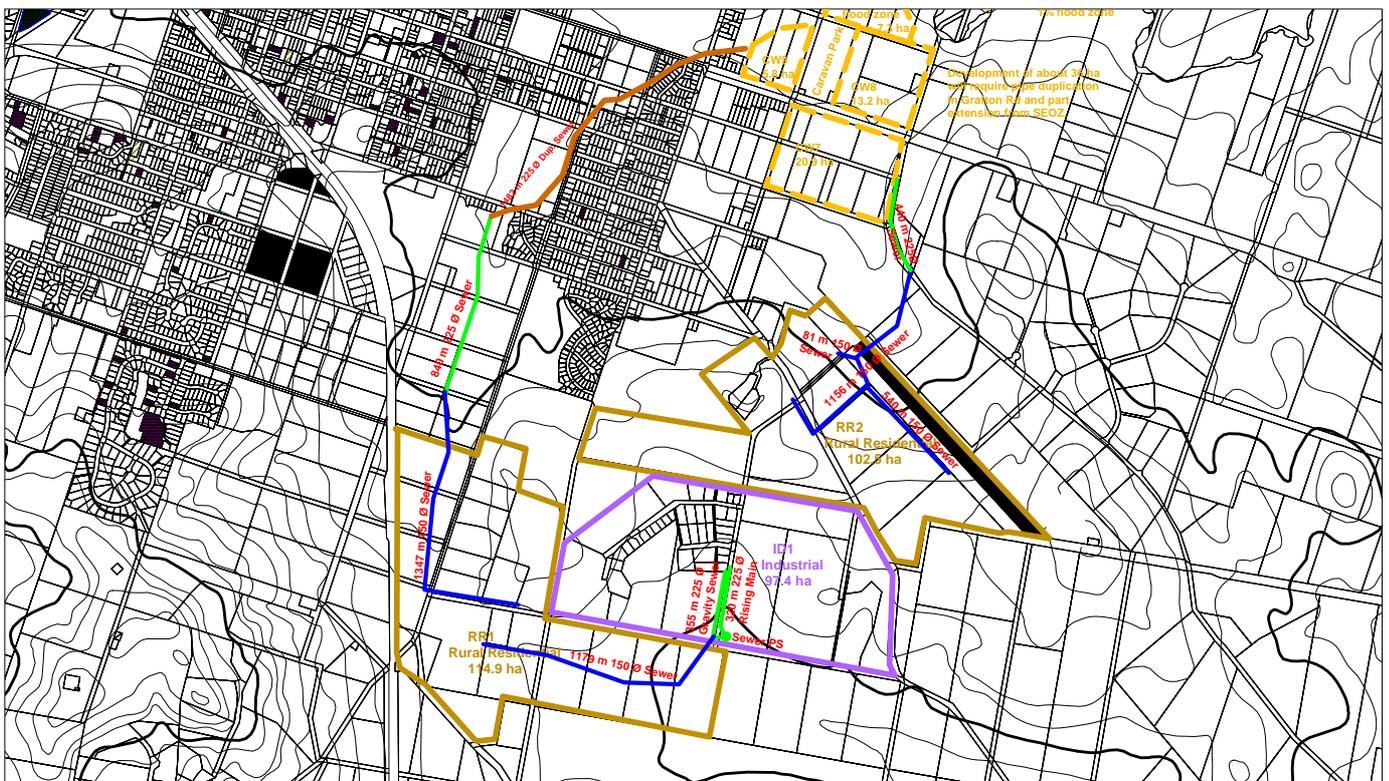
Plan 5a – Assumed eastern development areas and their required water supply infrastructure



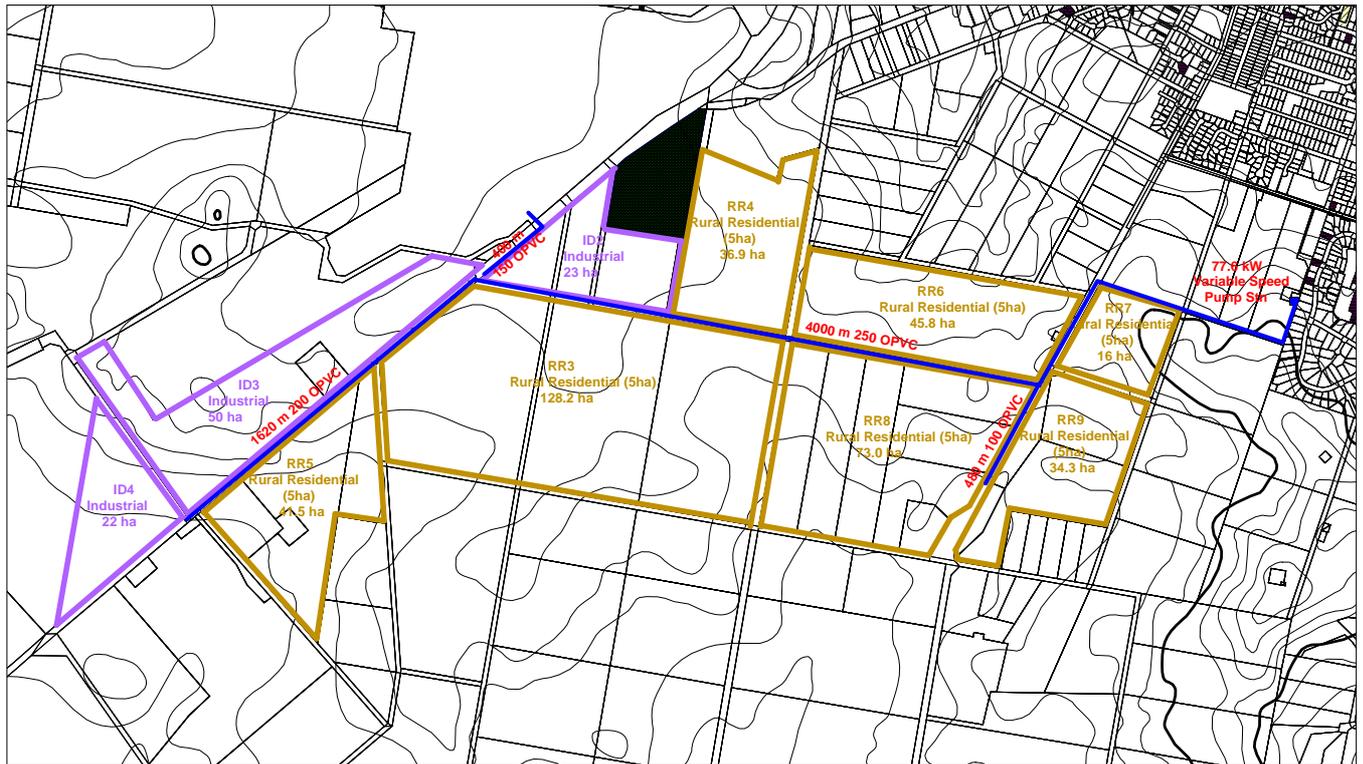
Plan 5b – Assumed eastern development areas and their required sewerage infrastructure



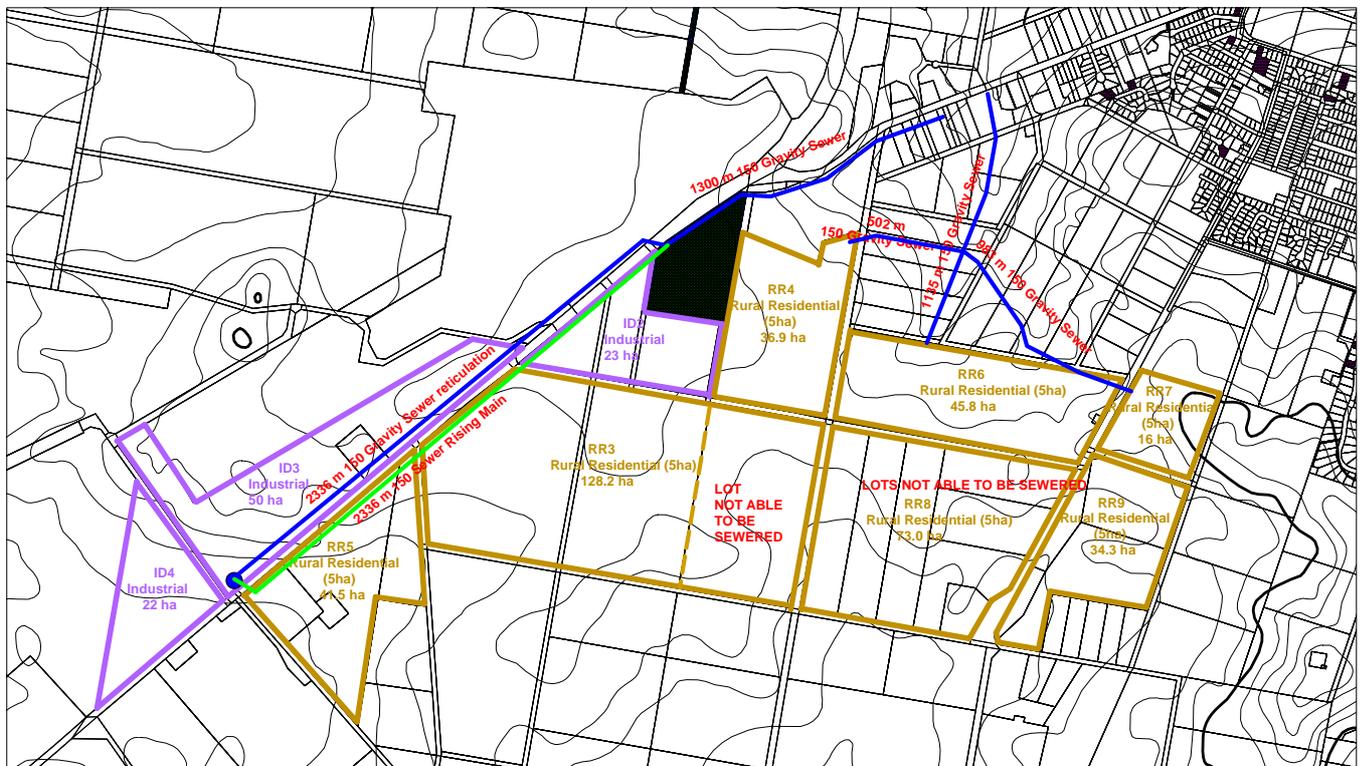
Plan 6a – Assumed Acacia Park development areas and their required water supply infrastructure



Plan 6b – Assumed Acacia Park development areas and their required sewerage infrastructure



Plan 7a – Assumed Airport development areas and their required water supply infrastructure



Plan 7b – Assumed Airport development areas and their required sewerage infrastructure

APPENDIX A – CALCULATIONS

Attachment 5 (of Developer Charges Guidelines) Calculations

Calculation of Equivalent Tenements – Water

Calculation of Equivalent Tenements - Sewerage

Tables

Table 1 – Developer Charges for the Water Supply Preferred Case using NPV of Annual Charges Method assuming Council Provided Growth Assets.

Table 2 - FINMOD Projected 30-Year Operating Statement for the Water Supply Preferred Case assuming Council Provided Growth Assets.

Table 3 – Developer Charges for the Sewerage Preferred Case using NPV of Annual Charges Method assuming Council Provided Growth Assets.

Table 4 - FINMOD Projected 30-Year Operating Statement for the Sewerage Preferred Case assuming Council Provided Growth Assets.

Attachment 5

Note: The term "Equivalent Tenements" is used differently in different applications.

Developer Charges uses the term relative to Residential and Non-Residential Revenue. This usage of the term includes access charges unrelated to water usage charges. The relativity is associated with average annual charges.

Water System Design and Investigation uses the term relative to Average Day Water Demand from an Average Single House and applies factors to this for other relativities.

Sewerage System Design and Investigation uses the term relative to Average Dry Weather Flow from an Average Single House and applies factors to this for other relativities. PWD developed standardised equivalence rates for application to new developments. Development Control has adopted these Standardised PWD equivalence rates for application of Water and Sewer Headworks Charges on new developments.

Calculation of Equivalent Tenements – Water .

It is necessary to estimate the number of assessments in terms of equivalent tenements when calculating the reduction amount under either the NPV of Annual Charges method or the Direct NPV method.

The number of equivalent tenements (ETs) in this case is the equivalent number of tenements in terms of revenue from annual rates and charges, on the basis that a standard house represents 1 ET.

The calculation therefore needs to take into account the amount of annual rates and charges revenue from:

- Houses
- Flats/Units/Town Houses
- Vacant lots
- Pensioners
- Non-residential

Example 14: Calculation of Equivalent Tenements

A water utility has the following number of assessments and amount of revenue from annual rates and charges for the previous financial year (say 2001/2002).

Assessments		
Residential Assessments comprised of:	= 4,700	<u>7775</u>
Houses (non-pensioner)	= 3,500	<u>5448</u>
Houses (pensioner)	= 350	<u>1400</u>
Flats/Units/Town Houses(non-pensioner)	= 500	<u>91 @ 4.37 = 398</u>
Flats/Units/Town Houses(pensioner)	= 100	<u>—</u>
Vacant Lots	= 250	<u>529</u>
Non-Residential Assessments	= 350	<u>555</u>
Total Assessments	= 5,050	<u>8330</u>
 Annual Revenue from Rates and Charges		
Residential Revenue	= \$1,300,000	<u>\$2,548,000</u>
Non-Residential Revenue	= \$220,000	<u>\$1,033,000</u>
Pensioner Rebate Grant	= \$30,000	<u>\$ 63,000</u>
Total Revenue	= \$1,550,000	<u>\$ 3,644,000</u>

This Revenue does not include revenue from Developer Charges.

Attachment 5

Example 14 (continued)

Revenue from Annual Charges

These depend on the annual charges set by the water utility. The factors for flats and vacant lots are based on annual charges for such customers of 67% and 50% of those for detached houses. The basis of the calculations for a pensioner house or flat is shown below.

House (pensioner)	= 0.87 of the annual charge for a house
Units/Flats/Town Houses (non-pensioner)	= 0.67 of the annual charge for a house
Units/Flats/Town Houses (pensioner)	= 0.55 of the annual charge for a house
Vacant Lots	= 0.50 of the annual charge for a house

The estimated charge for pensioner houses include the relevant amount relating to the Government grant for income foregone from pensioner rebates, generally 55% of the maximum pensioner rebate of \$87.50.

Thus if the charge for a non-pensioner house is \$300, the charge (including the Government grant) for house with the pensioner rebate would be \$260 [$300 - 0.45 \times 87.50$] i.e. about 0.87 [$260/300$] of the charge for a non-pensioner house.

Calculation of ETs

Number of Residential ETs	=	$3,500 + 0.87 \times 350 + 0.67 \times 500$	<i>5448 + 91 \times 4.37 \times 0.67</i>
	=	$+ 0.55 \times 100 + 0.50 \times 250$	<i>+ 0.87 \times 1400 + 0.3 \times 529</i>
	=	4,320	<i>= 7091</i>
Number of Non-Residential ETs	=	$220,000 / 1,300,000 \times 4,320$	<i>1033000 / 2548000 \times 7091</i>
	=	731	<i>= 2875</i>

Therefore:

Each Residential Assessment is equivalent to **0.92 ET** [= 4,320/4700] *7091/7775 = 0.91*

Each Non-Residential Assessment to **2.09 ET** [= 731/350] *2875/555 = 5.18*

Equivalent tenements can therefore be projected as follows, based on projections of residential and non-residential assessments. Assumed growth rate in this case is 2% pa.

Attachment 5

Note: The term "Equivalent Tenements" is used differently in different applications.

Developer Charges uses the term relative to Residential and Non-Residential Revenue. This usage of the term includes access charges unrelated to water usage charges. The relativity is associated with average annual charges.

Water System Design and Investigation uses the term relative to Average Day Water Demand from an Average Single House and applies factors to this for other relativities.

Sewerage System Design and Investigation uses the term relative to Average Dry Weather Flow from an Average Single House and applies factors to this for other relativities. PWD developed standardised equivalence rates for application to new developments. Development Control has adopted these Standardised PWD equivalence rates for application of Water and Sewer Headworks Charges on new developments.

Calculation of Equivalent Tenements - Sewerage

It is necessary to estimate the number of assessments in terms of equivalent tenements when calculating the reduction amount under either the NPV of Annual Charges method or the Direct NPV method.

The number of equivalent tenements (ETs) in this case is the equivalent number of tenements in terms of revenue from annual rates and charges, on the basis that a standard house represents 1 ET.

The calculation therefore needs to take into account the amount of annual rates and charges revenue from:

- Houses
- Flats/Units/Town Houses
- Vacant lots
- Pensioners
- Non-residential

Example 14: Calculation of Equivalent Tenements

A water utility has the following number of assessments and amount of revenue from annual rates and charges for the previous financial year (say 2001/2002).

Assessments		
Residential Assessments comprised of:	= 4,700	6536
Houses (non-pensioner)	= 3,500	4,938
Houses (pensioner)	= 350	1,200
Flats/Units/Town Houses(non-pensioner)	= 500	398 (91@4.37)
Flats/Units/Town Houses(pensioner)	= 100	
Vacant Lots	= 250	537
Non-Residential Assessments	= 350	481
Total Assessments	= 5,050	7,017
Annual Revenue from Rates and Charges		
Residential Revenue	= \$1,300,000	\$ 1,853,808
Non-Residential Revenue	= \$220,000	\$ 395,724
Pensioner Rebate Grant	= \$30,000	105,270
Total Revenue	= \$1,550,000	\$ 2,354,802

This Revenue does not include revenue from Developer Charges.

Attachment 5

Example 14 (continued)

Revenue from Annual Charges

These depend on the annual charges set by the water utility. The factors for flats and vacant lots are based on annual charges for such customers of 67% and 50% of those for detached houses. The basis of the calculations for a pensioner house or flat is shown below.

House (pensioner)	= 0.87 of the annual charge for a house
Units/Flats/Town Houses (non-pensioner)	= 0.67 of the annual charge for a house
Units/Flats/Town Houses (pensioner)	= 0.55 of the annual charge for a house
Vacant Lots	= 0.50 of the annual charge for a house

The estimated charge for pensioner houses include the relevant amount relating to the Government grant for income foregone from pensioner rebates, generally 55% of the maximum pensioner rebate of \$87.50.

Thus if the charge for a non-pensioner house is \$300, the charge (including the Government grant) for house with the pensioner rebate would be \$260 [300 - 0.45x87.50] ie. about 0.87 [260/300] of the charge for a non-pensioner house.

Calculation of ETs

Number of Residential ETs	=	3,500 + 0.87x350 + 0.67x500	<i>4938 + 91x4.37x0.67</i>
	=	+ 0.55x100 + 0.50x250	<i>+ 0.87x1200 + 0.3x537</i>
	=	4,320	<i>= 6,410</i>
Number of Non-Residential ETs	=	220,000/1,300,000 x 4,320	<i>396,000 / 1,854,000 x 6,410</i>
	=	731	<i>= 1,369</i>

Therefore:

Each Residential Assessment is equivalent to **0.92 ET** [= 4,320/4700] *6,410 / 6,536 = 0.98*

Each Non-Residential Assessment to **2.09 ET** [= 731/350] *1,369 / 481 = 2.85*

Equivalent tenements can therefore be projected as follows, based on projections of residential and non-residential assessments. Assumed growth rate in this case is 2% pa.

Table X - Calculation of Developer Charges using the NPV of Annual Charges Method Based on Input Reduction Amounts of #### /ET (2nd iteration) Armidale Dumaresq Council - Water Supply Utility

Year	Year No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	
Developer Charges																								
	Year 1	2005/06																						
	Base Year	2005/06																						
	Average Capital Charges per ET (2005/06\$)	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	
	Inflation from Base year to Year 1 (%)	0.00%																						
	Capital Charge (2005/06\$)	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	
	Input Reduction Amounts (2005/06\$)	1,754	1,754	1,754	1,754	1,754	1,560	1,467	1,360	1,241	1,109	1,003	862	690	539	394	255	112	-61	-258	-488	-749	-1,073	
	Developer Charge per ET (2005/06\$)	4,520	4,520	4,520	4,520	4,520	4,710	4,800	4,910	5,030	5,160	5,270	5,410	5,580	5,730	5,880	6,020	6,160	6,330	6,530	6,760	7,020	7,340	
	Developer Charges per assessment - Residential (2005/06\$)	4,110	4,110	4,110	4,110	4,110	4,290	4,470	4,580	4,700	4,800	4,920	5,080	5,210	5,350	5,480	5,610	5,760	5,940	6,150	6,390	6,680		
	Developer Charges per assessment - Non-Residential (2005/06\$)	21,290	21,290	21,290	21,290	21,290	22,222	22,637	23,155	23,724	24,346	24,864	25,486	26,314	26,988	27,713	28,386	29,060	29,837	30,769	31,857	33,100	34,602	
Assessments & ETs																								
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	Residential Assessments at year end	7,433	7,504	7,575	7,647	7,720	7,793	7,867	7,942	8,017	8,093	8,170	8,248	8,326	8,405	8,485	8,566	8,647	8,729	8,812	8,896	8,981	9,066	9,152
	Non Residential Assessments at year end	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673
	Backlog Assessments at year end	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Assessments at year end	8,084	8,156	8,228	8,301	8,375	8,449	8,524	8,600	8,676	8,753	8,831	8,910	8,989	9,069	9,150	9,232	9,314	9,397	9,481	9,566	9,652	9,738	9,825
	ET per Residential Assessment	0.91																						
	ET per Non Residential Assessment	5.18																						
	Total ETs	10,136	10,206	10,276	10,346	10,418	10,490	10,562	10,636	10,709	10,783	10,859	10,935	11,011	11,088	11,166	11,245	11,324	11,404	11,484	11,566	11,648	11,648	11,648
	New ETs per year (excluding backlog)	-	70	70	71	72	72	73	73	73	74	75	76	76	77	78	79	79	80	81	82	83	83	83
	Cumulative New ETs (excluding backlog)	-	70	140	210	282	353	426	499	573	647	722	799	875	952	1,030	1,109	1,188	1,267	1,348	1,430	1,512	1,595	1,677
	PV (new ETs excluding backlog) 30 years @ 7% pa	-	1,001	1,008	1,015	1,022	1,029	1,036	1,042	1,048	1,055	1,061	1,066	1,071	1,076	1,080	1,084	1,087	1,091	1,093	1,095	1,096	1,096	1,096
Revenue and Expenditure																								
	Rates & Charges Revenue, Trade Waste Charges, Other Sales and Charges, Pensioner Rebate Grant																							
	Revenue (\$'000) (2005/06\$)	5094	5111	5119	4936	4979	5032	5093	5155	5217	5233	5284	5350	5388	5409	5419	5429	5455	5488	5535	5589	5653	5721	
	OMA Expenditure (\$'000) (2005/06\$)	3,002	3,031	3,061	3,091	3,120	3,149	3,180	3,210	3,241	3,270	3,301	3,332	3,365	3,398	3,429	3,461	3,493	3,524	3,557	3,591	3,625	3,659	
	Revenue less OMA Expenditure (\$'000)	2,092	2,080	2,058	1,845	1,859	1,883	1,913	1,945	1,976	1,963	1,983	2,018	2,023	2,011	1,990	1,968	1,962	1,964	1,978	1,998	2,028	2,062	
	Revenue less OMA Expenditure for new ETs (\$'000)	14	28	42	50	63	76	90	104	119	131	145	160	174	185	196	206	218	231	245	259	278	297	
	PV (Revenue less OMA Expenditure for new ETs) 30 years @ 7% pa (\$'000)	1,909	1,837	1,764	1,688	1,685	1,613	1,526	1,423	1,306	1,174	1,067	920	742	579	426	276	121	-66	-281	-533	-818	-1,174	
	Output (calculated) Reduction Amounts	1,907	1,823	1,737	1,651	1,637	1,557	1,464	1,357	1,238	1,107	1,001	859	689	536	393	254	111	-61	-257	-486.7	-747	-1,072	
	Average Calculated Reduction for a 5 yr Period	1,751	1,751	1,751	1,751	1,751	1,557	1,464	1,357	1,238	1,107	1,001	859	689	536	393	254	111	-61	-257	-486.7	-747	-1,072	
	% Difference Between the Input and Output	0%																						

**Difference Less Than 2%, Calculation Complete
Developer Charges for the first 5 years = \$4520 in year 2005/06 dollars**

- General Notes:**
- Approximately three iterations of the financial planning model are normally required until the Output Reduction Amount for the first 5 years is within 2% of the Input Reduction Amount.

Developer Che	4,519	4,519	4,519	4,519	4,519	4,713	4,806	4,913	5,032	5,163	5,269	5,411	5,581	5,734	5,877	6,016	6,159	6,331	6,527	6,757		
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	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	
	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	2049/50	2050/51	2051/52	2052/53	2053/54	2054/55	
	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	
	6,270	6,270	6,270	6,270	6,270	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	6,268	
	-1,438	-1,818	-2,250	-2,591	-3,100	-3,633	-4,141	-4,686	-5,366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7,710	8,090	8,520	8,860	9,370	9,900	10,410	10,950	11,630	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	6,270	
	7,020	7,360	7,750	8,060	8,530	9,010	9,470	9,960	10,580	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	5,710	
	36,364	38,125	40,145	41,751	44,185	46,672	49,055	51,593	54,804	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	29,578	
	9,239	9,327	9,416	9,505	9,595	9,686	9,778	9,871	9,965	10,059	10,155	10,251	10,349	10,447	10,546	10,647	10,748	10,850	10,953	11,057	11,162	11,268	11,375	11,483	11,592	11,702	11,814	11,926	
	674	675	676	677	678	679	680	681	687	694	701	707	714	721	728	735	741	749	756	763	770	777	785	792	800	807	815	823	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9,913	10,002	10,092	10,182	10,273	10,365	10,458	10,552	10,652	10,753	10,856	10,959	11,063	11,168	11,274	11,381	11,489	11,598	11,709	11,820	11,932	12,045	12,160	12,275	12,392	12,510	12,629	12,749	
	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	11,648	
	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	
	1,760	1,842	1,925	2,007	2,090	2,173	2,255	2,338	2,420	2,503	2,585	2,668	2,750	2,833	2,915	2,998	3,080	3,163	3,245	3,328	3,410	3,493	3,576	3,658	3,741	3,823	3,906	3,988	
	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	1,096	
	5781	5848	5857	5929	5994	6029	6068	6140																					
	3,693	3,727	3,761	3,795	3,830	3,865	3,901	3,937	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2,088	2,121	2,096	2,134	2,164	2,164	2,167	2,203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	315	335	346	368	388	404	420	442	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	-1,572	-1,990	-2,460	-2,836	-3,390	-3,973	-4,526	-5,128	-5,870																				
	-1,434	-1,816	-2,245	-2,588	-3,094	-3,626	-4,130	-4,680	-5,357																				
	-1,434	-1,816	-2,245	-2,588	-3,094	-3,626	-4,130	-4,680	-5,357																				

Water FINMOD 2006 with likely increased costs. : 2006 Water Update

Operating Statement

FINMOD
Armidale City Council

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	
EXPENSES																															
Management Expenses	1592	1607	1622	1639	1654	1670	1686	1702	1719	1734	1750	1766	1784	1801	1818	1835	1852	1869	1886	1904	1922	1940	1958	1976	1994	2012	2031	2050	2069	2088	
Administration	1311	1323	1335	1348	1361	1374	1387	1400	1413	1426	1439	1453	1467	1481	1495	1509	1523	1537	1551	1566	1581	1596	1611	1626	1641	1656	1672	1688	1704	1720	
Engineering and Supervision	281	284	287	290	293	296	299	302	305	308	311	314	317	320	323	326	329	332	335	338	341	344	347	350	353	356	359	362	365	368	
Operation and Maintenance Expenses	1410	1424	1439	1452	1466	1479	1494	1508	1522	1536	1551	1566	1581	1597	1611	1626	1641	1655	1671	1687	1703	1719	1735	1751	1767	1783	1799	1815	1832	1849	
Operation Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Maintenance Expenses	1043	1053	1063	1073	1083	1093	1103	1113	1123	1133	1144	1155	1166	1177	1188	1199	1210	1221	1232	1244	1256	1268	1280	1292	1304	1316	1328	1340	1353		
Energy Costs	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	
Chemical Costs	274	277	280	283	286	289	292	295	298	301	304	307	310	313	316	319	322	325	328	331	334	337	340	343	346	349	352	355	358	361	
Purchase of Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Depreciation	1631	1684	1716	1728	1757	1794	1808	1830	1873	1908	1915	1921	1928	1933	1943	1955	1970	1990	2004	2010	2018	2025	2035	2041	2063	2045	2044	2038	2017	2017	
System Assets	1614	1655	1673	1681	1689	1697	1705	1713	1722	1751	1760	1767	1775	1783	1792	1800	1818	1838	1846	1854	1863	1871	1882	1891	1935	1944	1963	1962	1970	1979	
Plant & Equipment	17	29	43	47	68	98	103	116	151	156	156	154	154	150	151	155	152	152	158	156	156	154	153	150	128	101	92	77	47	38	
Interest Expenses	268	307	288	271	253	235	218	201	185	186	169	153	226	254	376	468	430	392	354	316	280	253	231	210	274	249	222	262	303	270	
Other Expenses	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	
TOTAL EXPENSES	5023	5145	5188	5216	5256	5306	5334	5369	5429	5494	5518	5540	5654	5719	5884	6021	6031	6045	6054	6058	6066	6080	6104	6123	6244	6235	6245	6314	6371	6374	
REVENUES																															
Rates & Service Availability Charges	1414	1432	1446	1463	1478	1495	1509	1526	1542	1558	1575	1592	1611	1628	1644	1662	1678	1697	1714	1732	1750	1768	1787	1806	1823	1843	1861	1880	1898	1918	
Residential	1305	1322	1336	1353	1367	1383	1398	1414	1431	1445	1462	1479	1498	1514	1530	1548	1564	1582	1598	1616	1635	1653	1670	1690	1707	1726	1744	1762	1781	1801	
Non-Residential	109	110	110	110	111	111	111	112	112	112	113	113	113	114	114	114	114	115	115	115	116	116	116	116	116	117	117	118	118	118	
User Charges	2250	2271	2292	2314	2335	2357	2376	2397	2421	2441	2463	2486	2511	2533	2556	2580	2600	2625	2647	2669	2696	2719	2742	2768	2792	2817	2840	2865	2890	2916	
Sales of Water : Residential	1628	1647	1665	1686	1705	1724	1743	1762	1784	1803	1823	1844	1867	1887	1908	1930	1949	1972	1993	2013	2038	2060	2081	2105	2128	2151	2173	2197	2220	2245	
Sales of Water : Non-Residential	622	624	626	629	630	632	634	635	637	638	640	642	645	646	648	649	651	653	654	656	658	659	661	663	664	666	667	668	670	671	
Extra Charges	31	31	32	32	31	31	32	31	32	32	32	32	32	32	32	32	32	33	32	33	33	33	33	33	33	33	33	34	33	34	
Interest Income	252	206	166	167	172	178	194	213	226	203	203	222	207	180	147	108	89	68	67	71	83	97	106	121	79	98	111	92	76	94	
Other Revenues	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	160	162	164	166	168	170	172	174	176	
Grants	63	61	60	58	57	56	55	53	52	50	49	48	46	46	44	44	42	41	40	39	38	37	37	36	35	34	33	32	32	31	
Grants for Acquisition of Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pensioner Rebate Subsidy	63	61	60	58	57	56	55	53	52	50	49	48	46	46	44	44	42	41	40	39	38	37	37	36	35	34	33	32	32	31	
Other Grants	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Contributions	946	971	984	762	764	774	783	791	799	803	814	820	830	839	844	851	860	870	879	889	895	906	915	920	930	936	946	955	965	971	
Developer Charges	320	343	348	352	352	357	361	366	370	370	375	379	384	388	388	393	397	402	406	411	415	420	424	424	429	433	438	442	447	451	
Developer Provided Assets	450	450	456	228	228	231	234	234	237	240	243	243	246	249	252	252	255	258	261	264	264	268	271	274	277	277	280	283	286	286	
Other Contributions	176	178	180	182	184	186	188	190	192	194	196	198	200	202	204	206	208	210	212	214	216	218	220	222	224	226	228	230	232	234	
TOTAL REVENUES	5094	5111	5119	4936	4979	5032	5093	5155	5217	5233	5284	5350	5388	5409	5419	5429	5455	5488	5535	5589	5653	5721	5781	5848	5857	5929	5994	6029	6068	6140	
OPERATING RESULT	71	-34	-69	-280	-277	-274	-241	-214	-212	-261	-235	-190	-266	-311	-465	-593	-576	-556	-518	-469	-414	-358	-323	-275	-387	-306	-250	-285	-303	-235	
OPERATING RESULT (less Grants for Acq of Assets)	71	-34	-69	-280	-277	-274	-241	-214	-212	-261	-235	-190	-266	-311	-465	-593	-576	-556	-518	-469	-414	-358	-323	-275	-387	-306	-286	-303	-235		

Table X - Calculation of Developer Charges using the NPV of Annual Charges Method Based on Input Reduction Amounts of ##### /ET (2nd iteration) Armidale Dumaresq Council - Sewerage Utility

Year	Year No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	
Developer Charges																								
	Year 1	2005/06																						
	Base Year	2005/06																						
	Average Capital Charges per ET (2005/06\$)	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	
	Inflation from Base year to Year 1 (%)	0.00%																						
	Capital Charge (2005/06\$)	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	
	Input Reduction Amounts (2005/06\$)	2,661	2,661	2,661	2,661	2,661	2,298	2,140	1,976	1,810	1,635	1,454	1,251	1,035	802	553	297	18	-274	-589	-919	-1,289	-1,727	
	Developer Charge per ET (2005/06\$)	4,060	4,060	4,060	4,060	4,060	4,420	4,580	4,740	4,910	5,080	5,270	5,470	5,690	5,920	6,170	6,420	6,700	6,990	7,310	7,640	8,010	8,450	
	Developer Charges per assessment - Residential (2005/06\$)	3,980	3,980	3,980	3,980	3,980	4,330	4,490	4,650	4,810	4,980	5,160	5,360	5,580	5,800	6,050	6,290	6,570	6,850	7,160	7,490	7,850	8,280	
	Developer Charges per assessment - Non-Residential (2005/06\$)	11,343	11,343	11,343	11,343	11,343	12,341	12,797	13,253	13,709	14,193	14,706	15,276	15,903	16,530	17,243	17,927	18,725	19,523	20,406	21,347	22,373	23,598	
Assessments & ETs																								
		2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	Residential Assessments at year end	7,091	7,158	7,226	7,295	7,364	7,434	7,505	7,576	7,648	7,721	7,794	7,868	7,943	8,018	8,094	8,171	8,249	8,327	8,406	8,486	8,567	8,648	8,730
	Non Residential Assessments at year end	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553
	Backlog Assessments at year end	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Assessments at year end	7,622	7,690	7,759	7,829	7,899	7,970	8,042	8,114	8,187	8,261	8,335	8,410	8,486	8,562	8,639	8,717	8,796	8,875	8,955	9,036	9,118	9,200	9,283
	ET per Residential Assessment	0.98																						
	ET per Non Residential Assessment	2.85																						
	Total ETs	8,463	8,531	8,601	8,671	8,741	8,813	8,885	8,958	9,031	9,106	9,180	9,255	9,332	9,408	9,485	9,564	9,643	9,722	9,803	9,884	9,966	9,966	9,966
	New ETs per year (excluding backlog)	-	69	69	70	70	71	72	72	73	74	74	75	76	76	77	78	79	79	80	81	82	82	82
	Cumulative New ETs (excluding backlog)	-	69	138	208	279	350	423	495	569	643	717	793	869	946	1,023	1,101	1,180	1,260	1,340	1,421	1,503	1,586	1,668
	PV (new ETs excluding backlog) 30 years @ 7% pa	-	995	1,003	1,010	1,017	1,024	1,031	1,037	1,044	1,050	1,056	1,061	1,067	1,071	1,076	1,080	1,084	1,086	1,089	1,091	1,092	1,092	1,092
Revenue and Expenditure																								
	Rates & Charges Revenue, Trade Waste Charges, Other Sales and Charges, Pensioner Rebate Grant																							
	Revenue (\$'000) (2005/06\$)	4588	4692	4755	4822	4872	4935	4986	5021	5054	5083	5120	5156	5195	5231	5262	5294	5324	5354	5379	5412	5444	5487	
	OMA Expenditure (\$'000) (2005/06\$)	2,346	2,370	2,390	2,411	2,437	2,458	2,482	2,504	2,528	2,552	2,576	2,600	2,625	2,649	2,675	2,700	2,725	2,750	2,775	2,800	2,825	2,852	
	Revenue less OMA Expenditure (\$'000)	2,242	2,322	2,365	2,411	2,435	2,477	2,504	2,517	2,526	2,531	2,544	2,566	2,570	2,582	2,587	2,594	2,599	2,604	2,604	2,612	2,619	2,635	
	Revenue less OMA Expenditure for new ETs (\$'000)	18	37	57	77	97	118	138	158	178	198	218	238	258	278	298	318	337	356	374	394	417	441	
	PV (Revenue less OMA Expenditure for new ETs) 30 years @ 7% pa (\$'000)	2,845	2,786	2,702	2,605	2,491	2,370	2,220	2,064	1,901	1,726	1,543	1,335	1,109	863	598	322	20	-299	-643	-1,003	-1,407	-1,886	
	Output (calculated) Reduction Amounts	2,860	2,778	2,675	2,561	2,432	2,298	2,140	1,976	1,810	1,635	1,454	1,251	1,035	802	553	297	18	-274	-589	-918.6	-1,289	-1,727	
	Average Calculated Reduction for a 5 yr Period	2,661	2,661	2,661	2,661	2,661	2,298	2,140	1,976	1,810	1,635	1,454	1,251	1,035	802	553	297	18	-274	-589	-918.6	-1,289	-1,727	
	% Difference Between the Input and Output						0%																	

Difference Less Than 2%, Calculation Complete

Developer Charges for the first 5 years = \$4060 in year 2005/06 dollars

General Notes:

1. Approximately three iterations of the financial planning model are normally required until the Output Reduction Amount for the first 5 years is within 2% of the Input Reduction Amount.

Developer Che	4,059	4,059	4,059	4,059	4,059	4,422	4,580	4,744	4,910	5,085	5,266	5,469	5,685	5,918	6,167	6,423	6,702	6,994	7,309	7,639				
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23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	2049/50	2050/51	2051/52	2052/53	2053/54	2054/55
6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722
6,720	6,720	6,720	6,720	6,720	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722	6,722
-2,221	-2,770	-3,372	-3,930	-4,537	-5,195	-5,935	-6,713	-7,561	0																		
8,940	9,490	10,090	10,650	11,260	11,920	12,660	13,430	14,280	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	6,720	
8,760	9,300	9,890	10,440	11,030	11,680	12,410	13,160	13,990	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	6,590	
24,966	26,505	28,187	29,754	31,436	33,288	35,369	37,506	39,872	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	18,782	
2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39	2039/40	2040/41	2041/42	2042/43	2043/44	2044/45	2045/46	2046/47	2047/48	2048/49	2049/50	2050/51	2051/52	2052/53	2053/54	2054/55
8,813	8,897	8,982	9,067	9,153	9,240	9,328	9,417	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
554	555	556	557	558	559	560	561	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9,367	9,452	9,538	9,624	9,711	9,799	9,888	9,978	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	9,966	
82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	
1,750	1,832	1,915	1,997	2,079	2,161	2,244	2,326	2,408	2,490	2,572	2,655	2,737	2,819	2,901	2,984	3,066	3,148	3,230	3,313	3,395	3,477	3,559	3,641	3,724	3,806	3,888	
1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	1,092	
5536	5589	5604	5623	5645	5679	5708	5741																				
2,879	2,907	2,935	2,963	2,991	3,019	3,048	3,077	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2,657	2,682	2,669	2,660	2,654	2,660	2,660	2,664	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
467	493	513	533	554	577	599	622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
-2,425	-3,024	-3,682	-4,291	-4,953	-5,672	-6,480	-7,329	-8,255																			
-2,221	-2,770	-3,372	-3,930	-4,537	-5,195	-5,935	-6,713	-7,561																			
-2,221	-2,770	-3,372	-3,930	-4,537	-5,195	-5,935	-6,713	-7,561																			

Sewer FINMOD 2006 : 2006 Sewer Update

Operating Statement

FINMOD
Armidale City Council

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	
EXPENSES																															
Management Expenses	1059	1070	1079	1089	1100	1109	1119	1129	1140	1151	1162	1173	1184	1194	1206	1217	1228	1239	1250	1261	1272	1284	1296	1309	1322	1335	1348	1361	1374	1387	
Administration	755	762	769	776	783	790	797	804	812	820	828	836	844	852	860	868	876	884	892	900	908	917	926	935	944	953	962	971	980	989	
Engineering and Supervision	304	307	310	313	316	319	322	325	328	331	334	337	340	343	346	349	352	355	358	361	364	367	370	374	378	382	386	390	394	398	
Operation and Maintenance Expenses	1287	1300	1311	1322	1337	1349	1363	1375	1388	1401	1414	1427	1441	1455	1469	1483	1497	1511	1525	1539	1553	1568	1583	1598	1613	1628	1643	1658	1674	1690	
Operation Expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Maintenance Expenses	1194	1205	1216	1227	1239	1251	1263	1275	1287	1299	1311	1323	1336	1349	1362	1375	1388	1401	1414	1427	1440	1454	1468	1482	1496	1510	1524	1538	1553	1568	
Energy Costs	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	
Chemical Costs	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Depreciation	696	722	750	775	802	811	822	854	892	902	910	916	911	900	908	947	948	941	950	971	969	965	979	996	978	954	948	937	911	892	
System Assets	685	704	708	713	720	723	727	732	735	740	744	747	752	756	760	780	784	788	793	797	802	806	810	815	819	823	828	832	837	841	
Plant & Equipment	11	17	42	62	82	88	94	123	157	162	166	168	159	144	147	168	152	157	174	167	159	168	181	159	130	120	104	74	51		
Interest Expenses	286	291	293	299	305	310	316	322	328	334	340	346	352	358	364	370	376	382	388	394	400	406	412	418	424	430	436	442	448	454	
Other Expenses	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	
TOTAL EXPENSES	3347	3901	4088	4104	4142	4138	4203	4600	4601	4577	4556	4530	4490	4476	4465	4598	4624	4572	4530	4525	4529	4489	4490	4546	5499	5442	5420	5352	5374	5337	
REVENUES																															
Rates & Service Availability Charges	3220	3245	3275	3312	3334	3372	3396	3425	3459	3487	3521	3551	3583	3612	3643	3677	3708	3740	3769	3805	3837	3864	3899	3936	3967	4000	4033	4067	4101	4136	
Residential	2235	2258	2284	2316	2338	2371	2393	2420	2450	2476	2506	2534	2562	2590	2618	2649	2677	2707	2734	2767	2796	2823	2855	2888	2918	2948	2979	3011	3043	3075	
Non-Residential	985	987	990	996	996	1001	1003	1005	1009	1011	1015	1017	1020	1022	1025	1028	1031	1033	1035	1038	1041	1042	1044	1048	1050	1052	1054	1056	1058	1061	
Trade Waste Charges	28	28	29	29	30	29	30	31	31	32	31	32	32	33	33	33	34	34	35	35	35	36	36	37	37	37	38	38	39		
Other Sales and Charges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Extra Charges	24	24	24	24	24	24	24	24	24	25	25	25	25	25	25	25	25	25	25	25	25	26	25	25	26	25	26	26	26	26	
Interest Income	358	425	455	475	496	517	536	534	522	517	513	510	507	505	500	488	478	466	452	440	435	441	446	451	424	400	379	367	352	338	
Other Revenues	554	559	564	569	574	579	584	589	595	601	607	613	619	625	631	637	643	649	655	661	667	673	679	685	692	699	706	713	720	727	
Grants	114	112	111	110	108	107	105	104	103	102	100	99	98	97	96	95	93	92	92	91	89	89	88	87	86	85	85	84	83	83	
Grants for Acquisition of Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pensioner Rebate Subsidy	62	60	59	58	56	55	53	52	51	50	48	47	46	45	44	43	42	41	40	38	38	37	36	35	34	33	33	32	31	31	
Other Grants	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	
Contributions	290	298	298	302	306	306	310	314	319	319	323	327	331	335	335	339	343	347	351	355	355	359	363	368	372	376	380	384	388	392	
Developer Charges	290	298	298	302	306	306	310	314	319	319	323	327	331	335	335	339	343	347	351	355	355	359	363	368	372	376	380	384	388	392	
Developer Provided Assets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL REVENUES	4588	4692	4755	4822	4872	4935	4986	5021	5054	5083	5120	5156	5195	5231	5262	5294	5324	5354	5379	5412	5444	5487	5536	5589	5604	5623	5645	5679	5708	5741	
OPERATING RESULT	1241	790	667	718	730	797	783	421	453	506	564	626	705	755	797	697	700	782	849	886	915	998	1047	1043	105	181	226	327	334	403	
OPERATING RESULT (less Grants for Acq of Assets)	1241	790	667	718	730	797	783	421	453	506	564	626	705	755	797	697	700	782	849	886	915	998	1047	1043	105	181	226	327	334	403	

APPENDIX B – STANDARD ET FIGURES FOR VARIOUS DEVELOPMENT CATEGORIES

The “Per Tenement” rates for Developer Charges adopted by Armidale Dumaresq Council are the current Standard ET Figures in “*Section 64 Determinations of Equivalent Tenements Guidelines*” published by the NSW Water Directorate and periodically updated. The version current at 1 July 2007 was published in January 2005.

The relevant Standard Tables in this document for determination of ET’s in Armidale at 1 July 2007 are the unrounded Tables 5, 6, and 7 in Appendix C and Table 4 within the body of the Guidelines. Copies of these tables have been attached to the Development Servicing Plan and will be periodically updated with changes to the Guidelines.

As suggested by the Guidelines, for industry categories that have process water a non-typical development ET will be determined based on the methodology in Section 6.3 of the Guidelines using the current ET water usage equivalence for Armidale.

Although these tables assume a town water usage of 230 kL/a and a sewer loading of 140 kL/a based upon an assumed residential standard discharge factor of 60%, the actual 5-year average annual detached residential water usage (the basis of a standard ET) for Armidale was 268.2 kL/a in 2005.

Calculation of the Charge

The calculation of the charge is based upon the number of “equivalent tenements (ETs)” obtained by applying the suggested values per standard unit in the tables in Attachment 1 to the DSP to the proposed development. The Water Directorate “suggested values” are considered by Council to be appropriate factors for development in Armidale.

A credit of 1.0 ET per assessment shall apply for any vacant land where prior to 30 June 2005 a payment of a water or sewer charge was required due to proximity of the water supply or sewerage service.

A credit shall apply for any existing approved development on the site. The credit shall be the greater of:

- 1.0 ET, or
- The previously-existing number of ETs on the development site (calculated using the following tables).

Where buildings are relocated from sites unlikely to be redeveloped (e.g. in floodways, land rezonings) an equivalent credit may be transferred with the buildings to the new site.

WORKED EXAMPLES FOR CALCULATION OF WATER SUPPLY AND SEWERAGE DEVELOPER CHARGES

Note: *These calculations are included as examples only. For details of the current contribution rates refer to the main text of the Development Servicing Plan.*

The calculation of the Developer Charge is based upon the adopted Developer Charge per ET (page 1), the development category, the assessed number of ETs (using Tables 1 to 4 – Pages 41-46), and any credit ETs applicable to the development.

EXAMPLE 1 – RESIDENTIAL SUBDIVISION

It is proposed to carry out a 15 lot residential subdivision over 2 existing lots which have been paying “Vacant Land” water supply and sewerage rates for 15 years.

Calculation:

The water supply developer charge per ET is \$4,520 per ET.

The sewerage developer charge per ET is \$4,060 per ET.

The 2 existing lots have been paying water supply and sewerage charges on the vacant land for greater than 10 years and thus attract 2 ET credits for water supply and 2 ET credits for sewerage.

Hence the number of ETs for which a developer charge is required
= Proposed ETs – ET credits
= 15 – 2
= 13 ETs.

Therefore the water supply Developer Charge due
= value of ET x number of ETs
= \$4,520 x 13
= \$58,760.

The sewerage Developer Charge due
= value of ET x number of ETs
= \$4,060 x 13
= \$52,780.

EXAMPLE 2 – MEDIUM DENSITY DEVELOPMENT

It is proposed to build 24 by 2-bedroom town houses over 3 existing lots of which they have been paying “Vacant Land” water supply rates for 13 years but no sewerage rates.

Calculation:

The water supply developer charge per ET is \$4,520 per ET.

The sewerage developer charge per ET is \$4,060 per ET.

The 3 existing lots have been paying water supply charges on the vacant land for greater than 10 years and thus attract 3 ET credits for water supply but attract no ET credits for sewerage as no lots have been paying sewerage charges.

From Table 1 the factors applying are those for “Units – 2 bedrooms” which are 0.60 ET per dwelling (town house) for water supply and 0.75 ET per dwelling (town house) for sewerage.

Hence the number of ETs for which a water supply developer charge is required
= Proposed ETs – ET credits
= (24 x 0.60) – 3
= 11.4 ETs.

Therefore the water supply Developer Charge due
= value of ET x number of ETs
= \$4,520 x 11.4
= \$51,528.

The number of ETs for which a sewerage developer charge is required
= Proposed ETs – ET credits
= (24 x 0.75) – 0
= 18 ETs.

The sewerage Developer Charge due
= value of ET x number of ETs
= \$4,060 x 18
= \$73,080.

EXAMPLE 3 – COMMERCIAL DEVELOPMENT

It is proposed to establish a two lane car wash on a commercial lot currently occupied by a fast food outlet (with amenities) floor area of 300 m² and which has been paying water and sewerage rates for more than 10 years but has not previously paid a developer charge.

Calculation:

The water supply developer charge per ET is \$4,520 per ET.
The sewerage developer charge per ET is \$4,060 per ET.

The existing commercial lot has been paying water supply and sewerage charges for greater than 10 years and thus attracts at least 1 ET credit for water supply and at least 1 ET credit for sewerage.

From Table 2 the factors applying to the new development are those for “Business– Specific – Car Wash” which are 5.70 ET per lane for water supply and 9.03 ET per lane for sewerage.

As there are two lanes in the new car wash, the number of ETs applying to the new development for water supply is 2 x 5.70 = 11.4ET and for sewerage is 2 x 9.03 = 18.06ET.

Also, from Table 2 the factors applying to the previous development are those for “Food Preparation – General – Take Away / Fast Food (including amenities)” which are 0.03 ET per m² floor area for water supply and 0.05 ET per m² floor area for sewerage.

As the floor area of the Take Away shop is 300 m², the number of ETs deemed to apply to the previous development for water supply is $0.03 \times 300 = 9.0$ ET and for sewerage is $0.05 \times 300 = 15.0$ ET.

The credit for water supply is the greater of 1.0 ET, or 9.0 ET for previous development. Thus the applicable credit for water supply is 9.0 ET.

Hence the number of ETs for which a water supply developer charge is required
= Proposed ETs – ET credits for existing use
= $(2 \times 5.70) - 9$
= 2.40 ETs.

Therefore the water supply Developer Charge due
= value of ET x number of ETs
= $\$4,520 \times 2.4$
= \$10,848.

The credit for sewerage is the greater of 1.0 ET, or 15.0 ET for previous development. Thus the applicable credit for sewerage is 15.0 ET.

The number of ETs for which a sewerage developer charge is required
= Proposed ETs – ET credits
= $(2 \times 9.03) - 15.0$
= 3.06 ETs.

Therefore the sewerage Developer Charge due
= value of ET x number of ETs
= $\$4,060 \times 3.06$
= \$12,424.

ATTACHMENT 1 – STANDARD ET FIGURES FOR VARIOUS DEVELOPMENT CATEGORIES

The “Per Tenement” rates for Developer Charges adopted by Armidale Dumaresq Council are the current Standard ET Figures in “*Section 64 Determinations of Equivalent Tenements Guidelines*” published by the NSW Water Directorate and periodically updated. The version current at 1 July 2007 was published in January 2005.

Definitions:

Gross Hectare	Total area of the allotment being developed.
Built-up Hectare	Floor area of the proposed development.
1 Hectare	10,000 m ² .

Tables:

- Table 5 – Standard ET Figures – Residential User Categories.
- Table 6 – Standard ET Figures – Commercial User Categories.
- Table 7 – Standard ET Figures – Industrial User Categories (General).
- Table 4 – Standard ET Figures for Sewer – Industrial User Categories (Detailed).

Addendum to Water Directorate Section 64 Determination of Equivalent Tenements Guidelines, May 2009:

On 28 May 2009 the Water Directorate issued an Addendum to Water Directorate Section 64 Determination of Equivalent Tenements Guidelines which presented the results of further investigation of ET equivalence for 15 different development categories. It recommends slightly adjusted ET equivalence values for 10 of these categories.

A copy of this addendum is appended at the end of Attachment 1. The revised values in the Addendum should be used in place of the corresponding values in Tables 4, 5, 6, and 7.

APPENDIX C – DETERMINATION OF THE USER CATEGORIES AND STANDARD ET FIGURES

A brief survey and review of the existing user categories and methodologies adopted by various water authorities across NSW as well as other parts of Australia has been undertaken. The review encompassed the following water authorities:

- 9 NSW local government authorities;
- 2 NSW state authorities;
- 4 interstate authorities; and
- 1 national association.

The purpose of the review was to determine a general list of water and sewer user categories that encompasses the range of categories likely to be encountered by the majority of regional water authorities in NSW. The compiled list was grouped into Residential, Commercial and Industrial development types.

An assessment of the general list of user categories compiled from the review was undertaken in order to determine the importance of including various user categories in the proposed list. While the proposed list is comprehensive and generally covers the full range of common development types across NSW, it is not exhaustive and consequently the guidelines include advice on how to calculate an equivalent loading for non-typical developments. It should be noted that the standard units used to assess ET figures need to be reviewed during the establishment of ET figures phase. Standard ET figures included in the guidelines were determined by reviewing water and sewer ET figures currently used by a sample of water authorities across NSW, including:

- Hunter Water Corporation
- Sydney Water Corporation
- Shoalhaven Council
- Coffs Harbour Council
- Hastings Council
- Tweed Council
- Dubbo Council
- Lismore Council
- Albury Council
- Gosford Council

Water and sewer ET figures based on PWD criteria (PWD, 1987) and WSAA guidelines (WSAA, 2002) were also reviewed.

Adopted ET figures for each sub-category were generally based on the following:

- Hunter Water values for water ET figures were adopted where data was available, as their values are based on a comprehensive database of local water users.
- Average values were adopted where there was some agreement between values used by various water authorities.
- For consistency, some adopted values were based on an assumed proportion of other adopted ET figures (eg based on a comparison of internal fixtures or a comparison of the proportion of external usage). Internal usage was assumed to be split into 15% kitchen usage, 25% laundry usage, 30% toilet usage and 30% bathroom usage.



- Sewer ET figures were generally determined from the water ET figures and an assumed discharge factor.
- Where insufficient data was available, no specific value was provided.
- For each sub-category, the basis for the adopted ET figures is shown on the following tables, along with the assumed discharge factor.

Table 5: Standard ET Figures – Residential User Categories including Assumed Discharge Factor

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET		
Single Residential Lots (House)					
Standard Residential Lot (450m ² - 2000m ²)	Lot	1.00	1.00	60%	Standard ET
Small Residential Lot (< 450m ²)	Lot	Use Units			SWC
Large Residential Lot (> 2000m ²)	Lot	1.20	1.00	50%	HWC data, increased outdoor
Multi-Residential Lots - Med Density (1 - 2 Storey)					
Dual Occ - 1 bedroom	Dwelling	Use Units for Lot Size of < 450m ² / dwelling or Standard Residential Lot for Lot Size > or= 450m ² / dwelling			
Dual Occ - 2 bedroom	Dwelling				
Dual Occ - 3 bedroom (or more)	Dwelling				
Duplex - 1 bedroom	Dwelling				
Duplex - 2 bedroom	Dwelling				
Duplex - 3 bedroom (or more)	Dwelling				
Units - 1 bedroom	Dwelling	0.40	0.50	75%	Half 3 b/room Unit
Units - 2 bedroom	Dwelling	0.60	0.75	75%	Average
Units - 3 bedroom (or more)	Dwelling	0.80	1.00	75%	Sewer ET same as House
Multi-Residential Lots (High Density)					
Multi Storey Apartments (1 bedroom)	Dwelling	0.33	0.50	90%	Sewer ET same as Units
Multi Storey Apartments (2 bedroom)	Dwelling	0.50	0.75	90%	Sewer ET same as Units
Multi Storey Apartments (3 or more bedroom)	Dwelling	0.67	1.00	90%	Sewer ET same as Units

Notes

1 Standard ET = Town Water Usage of 230 kL/a & Sewage Loading of 140 kL/a

Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET			
Accommodation (Permanent) Nursing Home / Special Care Home	Bed	0.500	0.750	Limited medical facilities, communal kitchen / laundry	90%	HWC water ET
Self Care Retirement Units / Villas	-	Use Residential Units		Internal kitchen / laundry facilities	-	
Self Care Retirement - Serviced Unit (Onsite)	-	Use Nursing Homes		No internal kitchen / laundry facilities	-	
Self Care Retirement - Serviced Unit (Offsite)	Bed	0.300	0.450	No internal kitchen / laundry facilities	90%	60% of Nursing Home
Boarding House	Bed	0.330	0.500	Communal kitchen / laundry	90%	Sewer = House / 2
Caravan / Mobile Home Park (1 br)	Van	0.400	0.500	Use if number of rooms unknown	75%	Same as Units
Caravan / Mobile Home Park (2 br)	Van	0.600	0.750		75%	Same as Units
Caravan / Mobile Home Park (3 br)	Van	0.800	1.000		75%	Same as Units
Accommodation (Short Term) Caravan Park				Peak week loading - use peak occupancy		
Camping Site (temporary)	Site	0.500	0.600	Site approx. equivalent. to ave caravan site	75%	< ave permanent caravan
Caravan / Cabin Site (temporary)	Site	0.500	0.600	Also use for on-site caravans / cabins	75%	As above
Bed & Breakfast / Guest House	Room	0.400	0.500	House based with communal kitchen / laundry	75%	Same as 1 b/r Unit
Motel / Hotel / Resort Room	Room	0.300	0.450	Consider food prep., entertainment & sporting separately	90%	Average
Backpackers / Hostel	Room	0.150	0.230	Communal kitchen, small laundry, not serviced	90%	1/2 boarding house / motel
Serviced / Unserviced Apartments	Bed	Use multi-res lots (high density)		Self contained (if not use motel)	-	
Accommodation (Medical Care) Hospital	Bed	0.900	1.400	Includes medical facilities	95%	HWC water ET
Hostel (Medical)	Bed	0.700	1.100	Includes some medical facilities	95%	Ave Nursing / Hospital
Business (Excluding Food Preparation) General						
Single Retail Shop	Floor Area m ²	0.002	0.003	Includes minor food preparation	95%	Average
Supermarket	Floor Area m ²	0.002	0.003	Consider amenities, food preparation and specific business separately	95%	HWC water ET, average
Shopping Centre	-	Insufficient Data			-	
Offices	Floor Area m ²	0.004	0.006		95%	Average

Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor (Continued)

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS	
		WATER ET	SEWER ET				
Specific Business Hairdresser / Beauty Salon Laundromat Medical Centre Plant Nursery Car Yard / Showroom Service Station Car Wash Escort Agency Animal Boarding Self Storage Food Preparation General Restaurant / Café Take Away / Fast Food (no amenities) Take Away / Fast Food (including amenities) Catering Specific Bakery Butcher Fishing Co-op Entertainment Licensed Club Pub / Bar Cinema / Theatre / Public Entertainment Function / Conference Centre Marina	Basin	0.500	0.800	Based on number of consultation rooms Consider case by case	95%	HWC water ET	
	Machine Room	0.450	0.700				
		0.400	0.600				
	Floor Area m ²	Insufficient Data		Consider case by case Consider office area only	-	Average	
	Lane	0.002	0.002				
	Lane	0.600	0.900				
	Room	5.700	9.000				
			0.400	0.500		75%	HWC water ET
			Insufficient Data			-	HWC water ET
		Floor Area m ²	0.004	0.006		95%	Same as Office
	Floor Area m ²	0.008	0.013	Also use for general food preparation	95%	Average	
	Floor Area m ²	0.015	0.024				
	Floor Area m ²	0.030	0.048				
	Floor Area m ²	0.015	0.024				
		Insufficient Data					
		Insufficient Data		Use Take Away / Fast Food (no amenities)	-		
		Insufficient Data		Use Take Away / Fast Food (no amenities)	-		
		Insufficient Data		Use Take Away / Fast Food (no amenities)	-		
	Floor Area m ²	Insufficient Data		Separate into Food Preparation, Entertainment, Amenities Consider food preparation area separately	-	Take Away (incl amenities)	
	Floor Area m ²	0.030	0.048				
		Insufficient Data		Use Food Preparation & Amenities Use Food Preparation & Amenities	-	-	
		Insufficient Data					
	Berth	0.600	0.900				
		Insufficient Data			90%	HWC Water ET	

Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor (Continued)

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET			
Sporting / Spectator Facilities General Amenities & Indoor Facilities Specific	-	Insufficient Data		Use Food Preparation & Amenities	-	
	-	Insufficient Data		Consider case by case	-	
	Lane	0.350	0.550	Separate into Food Preparation, Amenities, Irrigation	95%	HWC Water ET
	Bowling Green	Insufficient Data		Consider case by case	-	
Swimming Pool - Indoor Swimming Pool - Outdoor Community Facilities	ML	Insufficient Data		Consider case by case	-	
	ML	Insufficient Data		Consider case by case	-	
	Person	0.060	0.100		95%	HWC water ET
	Person	0.030	0.050		95%	HWC water ET
Child Care Centre / Pre-school Education - School (primary & secondary) Education - College, University (tertiary) Correctional Centre Church / Place of Worship Community Centre / Hall Parks / Gardens / Reserves (Irrigation) Public Amenities Block (per shower) Public Amenities Block (per wc)	Person	0.015	0.024	Consider Food Preparation separately	95%	HWC water ET
	Person	0.500	0.750		90%	Nursing Home
	-	Insufficient Data		Use Food Preparation & Amenities	-	
	-	Insufficient Data		Use Food Preparation & Amenities	-	
	Shower	0.400	0.600	Consider case by case	95%	Average
	wc	0.400	0.600		95%	Average

Table 7: Standard ET Figures – Industrial User Categories* (General) including Assumed Discharge Factor

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET**		
Industrial General					
Light Industrial	Gross Ha	15	15	60%	Average
Future Unknown - Light	Gross Ha	15	15	60%	Light Industrial
Future Unknown - Med	Gross Ha	30	30	60%	PWD, HWC Sewer ET
Future Unknown - Heavy	Gross Ha	50	50	60%	PWD, HWC Sewer ET

* For industrial categories that have process water, it is suggested that a non-typical development ET is determined based on the methodology in Section 6.3 of the guidelines.

** Additional ET figures for sewer have been included on Table 4, for a large range of detailed subcategories. These figures are provided for background information and should only be used as a general guide or where actual consumption data cannot be observed.

Notes

- 1 Standard ET = Town Water Usage of 230 kL/a & Sewage Loading of 140 kL/a
 Assumed Residential Standard Discharge Factor: 60%
 Gross Ha = Total land area of zone

10 STANDARD ET FIGURES FOR SEWER – INDUSTRIAL USER CATEGORIES
Table 4: Standard ET Figures for Sewer - Industrial User Categories (Detailed)

CATEGORY	STANDARD UNIT	SEWER ET				PWD
		WSAA ET / Built-up Ha (N=1)	WSAA ET / Built-up Ha (N=2)	WSAA ET / Built-up Ha (N=3)	WSAA ET / Built-up Ha (N=4)	
Food Manufacture						
Dairy						
Milk	Built-up Ha	2,857	1,914	1,743	1,600	1,400
Cheese, butter and yoghurt	Built-up Ha	1,714	1,149	1,046	960	850
Ice Cream	Built-up Ha	571	383	349	320	350
Fruit and Vegetable						
Cannery	Built-up Ha	1,143	766	697	640	550
Condiments and Sauces	Built-up Ha	1,143	766	697	640	550
Meat						
Abattoir	Built-up Ha	1,143	766	697	640	550
Rendering tallow	Built-up Ha	571	383	349	320	300
Gelatine and glue	Built-up Ha	1,714	1,149	1,046	960	850
Poultry	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Small-goods	Built-up Ha	1,143	766	697	640	550
Grain						
Flour milling	Built-up Ha	29	19	17	16	15
Starch	Built-up Ha	1,714	1,149	1,046	960	850
Edible oils and fats	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Cereals	Built-up Ha	286	191	174	160	150
Bakery	Built-up Ha	29	19	17	16	15
Biscuits and cakes	Built-up Ha	286	191	174	160	150
Beverages						
Beer	Built-up Ha	1,143	766	697	640	550
Soft drinks and cordials	Built-up Ha	571	383	349	320	300
Others						
Yeast	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Confectionery	Built-up Ha	143	96	87	80	80
Salt	Built-up Ha	571	383	349	320	300
Textile and Leather						
Tannery and Hides	Built-up Ha	1,143	766	697	3,640	550
Wool						
Wool scour	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Felt and Carpet	Built-up Ha	571	383	349	320	300
Dyeing and spinning	Built-up Ha	571	383	349	320	300
Cotton and Synthetics						
Dyeing and spinning	Built-up Ha	1,143	766	697	320	550
Chemical						
Petrochemical						
Oil Refinery	Gross Ha	29	19	17	16	15
Pharmaceutical	Built-up Ha	286	191	174	160	150
Organic						
Liquids	Built-up Ha	571	383	349	320	300
Resins, polymers and plastics	Built-up Ha	571	383	349	320	300
Adhesives	Built-up Ha	571	383	349	320	300
Others						
Soaps and detergents	Built-up Ha	286	191	174	160	150
Paint manufacture	Built-up Ha	143	96	87	80	80

Table 4: Standard ET Figures for Sewer - Industrial User Categories (Detailed) (continued)

CATEGORY	STANDARD UNIT	SEWER ET				
		WSAA ET / Built-up Ha (N=1)	WSAA ET / Built-up Ha (N=2)	WSAA ET / Built-up Ha (N=3)	WSAA ET / Built-up Ha (N=4)	PWD
Metal Processing						
Metal Finishing						
Electroplating	Built-up Ha	571	383	349	320	300
Anodizing	Built-up Ha	571	383	349	320	300
Galvanizing	Built-up Ha	571	383	349	320	300
Battery Manufacture						
Dry Cell	Built-up Ha	286	191	174	160	150
Wet cell (lead acid)	Built-up Ha	286	191	174	160	
Engineering						
Machine shops	Built-up Ha	286	191	174	160	
Sheet metal	Built-up Ha	286	191	174	160	
Foundry	Built-up Ha	286	191	174	160	
Rolling	Built-up Ha	286	191	174	160	
Extrusion	Built-up Ha	286	191	174	160	
Manufacture - Non-Metallic						
Paper	Built-up Ha	143	96	87	80	80
Plastics	Built-up Ha	571	383	349	320	
Wood	Built-up Ha	143	96	87	80	80
Mining (Earth)						
Glass	Built-up Ha	143	96	87	80	80
Fibre cement	Built-up Ha	71	48	43	40	
Concrete products	Built-up Ha	1,143	766	697	640	
Services						
Laboratories						
Industrial and research	Built-up Ha	1,143	766	697	640	550
Others						
Film Processing	Built-up Ha	571	383	349	320	300

Notes

N = number of independent same category industrial connections

Built-up Ha = Total floor area of building

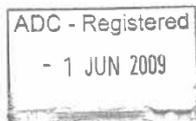
Gross Ha = Total land area of zone

For more information refer to (PWD, 1987) & (WSAA, 2002)

Addendum to Water Directorate Section 64 Determination of Equivalent Tenements Guidelines, May 2009



28 May 2009



Mr Shane Burns
General Manager
Armidale Dumaresq Council
P.O. Box 75A
ARMIDALE NSW 2350

Dear Shane

Re: Section 64 Determinations of Equivalent Tenements Guidelines, May 2009

The Water Directorate is very pleased to have developed this addendum to the *Section 64 Determinations of Equivalent Tenements Guidelines* on behalf of our member councils. An addendum to these Guidelines has now been prepared by the Water Directorate's Policy Subcommittee. Enclosed is a copy which I recommend you pass onto your technical staff.

The Water Directorate first published the *Section 64 Determinations of Equivalent Tenements Guidelines* in January 2005. The focus of that document was to assist Councils with calculating the appropriate Equivalent Tenement (ET) load for water and sewerage systems for various types of development. It is clear that a number of Councils adopted many aspects of the Guidelines.

Since then the Water Directorate has encouraged feedback on the content, structure and usefulness of the document. In 2007 the Policy Subcommittee decided to collect further data to check and validate some examples of the ET loadings categories. Data was collected from 18 councils and analysed by the Western Research Institute. This data indicated that variability may exist across different categories and different geographical areas. Further data was collected in 2008 from various member Councils across the state for a number of different land use categories.

The beginning of this new document contains the addendum whilst the the bulk of the remainder is a reproduction of the Guidelines distributed in January 2005. It may be appropriate to update these original Guidelines at some stage in the future. However, it is considered important to circulate the new data that is available to maximise benefits to member councils and prevent delays.

Feedback about the content, structure or usefulness of this document is welcome. For more information or if you wish to purchase extra copies please contact Eloise Stanley on (02) 8267 3009 or by email: estanley@waterdirectorate.org.au

Yours sincerely

Gary Mitchell
Executive Officer
Encl.

Addendum to Water Directorate Section 64 Determination of Equivalent Tenements Guidelines, May 2009

WATER DIRECTORATE – MAY 2009

BACKGROUND TO THIS ADDENDUM

The Water Directorate published the *Section 64 Determinations of Equivalent Tenements Guidelines* in January 2005. The document was originally developed by Hunter Water Australia under the direction and peer review of the Water Directorate's Policy sub-committee.

The Water Directorate Technical Guidelines (Guidelines) are intended to be used to assist Councils in proportioning developer charges across different land use categories.

Since the Guidelines were first published, the Water Directorate has encouraged feedback on the content, structure and usefulness of the document. The focus of the document was to assist Councils with calculating the appropriate Equivalent Tenement (ET) load for water and sewerage systems for various types of development. It is clear that a number of Councils have adopted many aspects of the Guidelines.

The methodology for the setting of the actual charge per ET is set out in the document *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* (published by DLWC in December 2002). Councils would be aware that IPART undertook a review of the DWE (formerly DLWC) Guidelines in June 2007 including hosting two public workshops. One of the issues raised in that review was the methodology for the calculation of ETs. No determination or results from this review has been made available to Councils as at the time of writing this foreward (May 2009).

For the purpose of our Guidelines, a "standard ET" represents an average water consumption of 230kL/annum. This figure was based on the average residential water consumption at the time the Guidelines were developed by Hunter Water.

A number of other factors such as BASIX, the installation of rainwater tanks and increasing use of pressure sewer systems will have an effect on future demands on water and sewerage. Changing usage patterns may not be stabilized for many years to come.

Given the ongoing discussions regarding the various aspects of Section 64 methodology, the Water Directorate commenced data collection in 2007 in order to check and validate some examples of the ET loadings categories in the guidelines.

Further data was collected in 2008 from various member Councils across the state for a number of different land use categories.

Application of the Guidelines

The Guidelines attempt to provide Councils (as Local Water Utilities) with a basis for which to determine commercial and industrial ET loadings. However, each Council should analyse any relevant local factors to develop their own specific system.

In many areas Councils have adopted a two-stage process for commercial and industrial developments which allows an initial ET loading to be assumed at the time of subdivision (at this time the final use for each separate lot may not be known). This initial ET load is based on an average assumed loading per hectare. The charges applied at the time of subdivision then provide a base entitlement for each allotment. As each allotment is developed, the new ET is calculated based on the type of development to be constructed. This may then equate to an additional charge if the development is a higher water/sewerage user than assumed in the base entitlement. Each Council should adopt appropriate policies that deal with these types of applications.

Methodology of the Review

These Guidelines have numerous categories with equivalent tenement loadings given for water and sewerage. The categories have a "standard unit" of measure (for example, the standard unit for caravan parks is the number of sites), by which the equivalent water and sewerage tenement can be calculated.

In order to review the ET calculations, a number of categories were selected with their standard unit. Councils were requested to provide actual water usage data for each category in accordance with each standard unit.

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The data collected was then analysed by the Western Research Institute at the Charles Sturt University to determine whether any statistically significant relationships existed between water consumption and a number of different variables in each development category.

At the outset of the exercise, it was recognised that the collection of consistent data across numerous areas and Councils was an extremely difficult task. Although most Councils have easily accessible data from water meter readings, the data relating to the standard unit of measure was far more difficult to obtain. In many cases, information on individual assessments would need to be made by site inspection, interrogation of the GIS for individual parcels of land, or by referral to original development/building application files. Recognising the limited resources available to all Councils to commit to such a task, the number of categories was limited to the following:

- Bulky Goods Centres
- Caravan Parks
- Clubs
- Hotels
- Motels/Resorts
- Schools
- Shopping Centres
- Supermarkets
- Hospitals
- Motor Vehicle service mechanics
- Service Stations
- Storage Facilities
- Swimming Pools
- Landscape Suppliers/Nurseries
- Restaurants

Upon initial analysis of the data, it also became clear that there could also be different interpretations of the standard unit. Different interpretations were clarified to provide as consistent approach as possible. A total of 257 non-residential water usage figures were analysed in this exercise. Eighteen Councils contributed to the data.

Results

The following table provides a summary of the findings of this study. Of the 15 categories studied, the Western Research Institute found statistically significant and positive relationships between water consumption and a number of different variables in 10 of the categories. These 10 categories were:

- Bulky Goods Centres
- Caravan Parks
- Clubs
- Hotels
- Motels/Resorts
- Schools
- Shopping Centres
- Supermarkets
- Hospitals
- Motor Vehicle Service Mechanics

The 5 categories that did not provide statistically significant relationships were:

- Service Stations
- Storage Facilities
- Swimming Pools
- Landscape Suppliers/Nurseries
- Restaurants

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Table 1A: 15 Categories of Standard ET Figures

Category	Standard Unit	Water Directorate Guidelines Water ET	"Best Fit" Water ET from analyses 2007 and 2008
Bulky Goods Centres	Floor Area (m2)	n/a	0.003
Caravan Parks	No. of Sites	0.5	0.3
Clubs	Floor Area (m2)	0.03	0.02
Hotels	No. of Rooms	0.3	0.5
Motels/Resorts	No. of Rooms	0.3	0.4
Schools	No. of Students	0.03	0.04
Shopping Centres	Floor Area (m2)	n/a	0.005
Supermarkets	Floor Area (m2)	n/a	0.002
Hospitals	No. of Beds	0.9	0.94
Motor Vehical service mechanics	Floor Area (m2)	n/a	0.0005
Service Stations	Floor Area (m2)	n/a	Insufficient correlation
	Number of Lanes	0.6	Not analysed
Storage Facilities		0	Insufficient correlation
Swimming Pools	Surface Area	n/a	Insufficient correlation
	ML	n/a	Not analysed
Landscape Suppliers/Nurseries	Floor Area (m2)	n/a	Insufficient correlation
Restaurants	Floor Area (m2)	0.02	Insufficient correlation
	No. of Seats	n/a	Insufficient correlation

In the 10 categories that showed statistically significant and positive relationships between water consumption and a standard unit, 2 categories showed a lower usage trend than the Guidelines, 4 categories gave a figure that was not previously available and the remaining 4 categories showed a higher water usage per standard unit than the Guidelines.

The 5 categories that did not provide statistically significant relationships and possible reasons for this are discussed below.

Service stations – The Water Directorate Guidelines provide for an ET of 0.6 per lane for service stations. The analysis was on basis of area (as this was considered to be an easier unit to collect data on). No statistically valid relationship was found for all service stations with area (although there was some relationship for larger stations above 1,000m²). There is a range of variables which could impact on water usage at service stations, such as the inclusion of car washing facilities, truck parking areas, motor vehicle facilities and a wide range of retail food and beverage facilities

Storage facilities – The Guidelines suggest a zero water usage and it is expected that such facilities would not consume much water. The variation found in this current analysis probably related to other indirect factors such as landscaping, rather than the primary business activities.

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Swimming Pools – The study found some relationship between surface area and water usage with those sites that had smaller pools, but overall the data did not provide a statistically valid relationship. There is a wide range of factors that could influence water consumption including age of swimming pools, evaporation rates in different areas, inclusion of play equipment, indoor and outdoor pools, hours of operation, other integrated facilities and the number of patrons.

Landscape supplies and nurseries - The Guidelines do not provide a standard water ET for plant nurseries, and note that there is insufficient data to support a standard ET and that these facilities should be considered case by case. An attempt was made to correlate water usage to the surface area of operations. The correlation was found to be relatively weak, with likely variables such as the differences between the primary sources of the business. For example, it is likely that an outlet such as a plant nursery would use more water on a square metre basis than an outlet that has a large focus on the supply of soil, mulch and other such landscape supplies.

Restaurants - The Water Directorate Guidelines provide an ET basis on the floor area of a restaurant. Data collected on floor areas did not provide a statistically valid relationship. Further data was collected on the number of seats. This also did not provide a good indicator of water consumption. Variation in the types of restaurant outlets in the sample data may have contributed to this, as well as a number of other wide ranging variables such as hours of operation, turnover of patrons and the method of food service.

Conclusion

The Water Directorate *Section 64 Determinations of Equivalent Tenements Guidelines* provides a basis for each Council to set appropriate ET loads for water and sewerage systems for various types of development. Data collected by the Water Directorate from 18 Councils across NSW and analysed by the Western Research Institute provides an indication of the variability that may exist across different categories and different geographical areas. As with any series of Guidelines, it is important for each end-user to apply appropriate local knowledge and characteristics to any adopted formulae. Knowing some of the variables involved in the different development categories means that individual Councils can collect and apply their own data to the local context. As water usage patterns change, such data collection will provide a basis for further reviews of the way in which water and sewerage development charges are applied.